FINAL REPORT

for REMOVAL ACTIVITIES

at the HOLMDEN AVENUE SITE

Cleveland, Ohio

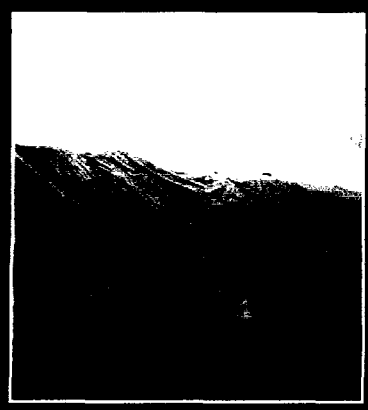
Prepared for:

U.S. EPA
Ohio EPA NEDO

Prepared By:

ENTACT, Inc.
February 6, 1998



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1360 North Wood Dale Road Suite A Wood Dale, Illinois 60191 Phone (630) 616-2100

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APPENDICES

1.0 INTRODUCTION

The following ENTACT Final Report outlines activities completed as part of the Removal Action at the Holmden Avenue property in November and December of 1997. On November 7, 1997 ENTACT received notice to proceed with the removal action from the U.S. EPA Region 5 and the Master Metals Technical Committee. Field activities began at the Holmden Avenue property on November 10, 1997 and were completed on December 6, 1997.

1.1 Site Description

The Holmden Avenue property is located at 1157 Holmden Avenue in Cuyahoga County, Cleveland, Ohio. The property is bordered on the north by Holmden Avenue, the west by residential homes, and the south and east by a steep slope which leads down to property owned by LTV Steel. The property is "L"shaped with the long dimension aligned north-south. The approximate area affected by removal activities was 0.85 acres. At the time of removal activities there were no structures on site. Locations of both the Holmden Avenue site and the Master Metals facility have been noted on Figure 1-1.

1.2 Site History

There have been several soil investigations conducted at the site in previous years. Environment One, Inc. of Valley View, Ohio conducted a surface soil investigation in June of 1993. ENTACT conducted an additional surface and subsurface soil boring investigation in May 1997, as well as, a brief XRF surface soil investigation over the entire property in October of 1997.

Historical site usage has been primarily residential. The most recent residential structure on site has been demolished for a few years. Prior to any residential use, however, the site was utilized as a dumping ground. Residents recounted disposal of concrete sidewalks and other structures by the City of Cleveland for a number of years. This is still evidenced by the existence of concrete, wood, and other construction materials at the surface and at depth of the fill area.

In addition to various other disposal activities, contaminated soil from the Master Metals, Inc. facility was allegedly transported to the site and utilized for fill of low areas. This apparently is the source of the lead contaminated soil on site. A previous removal action was conducted at the site on Holmden Avenue. However, as the most recent site investigations indicated, lead contamination was still present prior to initiation of this removal action.

1.3 Removal Action Objectives

The main objective of the Holmden Avenue removal action was to remove lead contaminated soil above the residential clean-up level of 400 mg/kg total lead. After removal the site was to be restored to its original condition and revegetated.

2.0 MOBILIZATION/SITE PREPARATION

2.1 Mobilization

Mobilization to the Holmden Avenue site began with the implementation of the Site Safety and Health Plan (SSHP). This plan is included in the Phase I Time-Critical Removal Action Workplan for the Master Metals Site in Cleveland, Ohio (ENTACT, May 13, 1997) as Appendix C. ENTACT crew members began physical mobilization to the site on November 10, 1997.

The office trailer established for the Master Metals, Inc. (MMI) Time-Critical Removal Action was utilized during the Holmden Avenue Removal Action. This was made possible by the close proximity of the Holmden Ave. property (site) to the MMI facility. ENTACT associates previously involved with the Time-Critical Removal Action at the MMI facility were deployed to the site.

The existing decontamination trailer utilized during the MMI removal was demobilized prior to work beginning at the Holmden Ave. site. Therefore, it was necessary to establish a temporary decontamination area at the MMI facility in addition to the small decon setup at the site. A boot wash and PPE disposal container were established at the site while decontamination at the MMI facility consisted of hand/eye wash with water containment, PPE storage and disposal, and sampling equipment decontamination.

During mobilization activities, ENTACT crew members discussed the removal action activities with surrounding residents. Information regarding contaminant hazards, exclusion areas, equipment traffic, air monitoring, and estimated completion time was recounted to the nearby residents.

2.2 Site Preparation

Prior to any equipment mobilization, utility companies were contacted to mark any subsurface lines or conduit that might be impacted by heavy equipment or excavation activities.

The following utilities were contacted:

East Ohio Gas
Cox Communication
Northeast Ohio Regional Sewer District
World Com
AT&T
The Illuminating Company
Cleveland Water Pollution Control
Ameritech

Grubbing of lead impacted areas, another activity performed during site preparation, precluded any removal or excavation activity. Heavy vegetative growth at the site necessitated the removal of brush and small trees to provide a clear area for work progression and equipment access.

Site preparation activities

2.3 Coordinate Grid System

Immediately following clearing activities, a coordinate grid system was established on site. This grid system was established with three objectives in mind. First, to allow for a systematic approach to contaminant removal. Secondly, to create a reproducible method for collecting and identifying verification samples; and, ultimately to determine extent of contamination in areas beyond those remediated by removal activities.

This system was aligned with the existing property lines bordering the site and Holmden Avenue. Grids were set out based upon 50' by 50' squares. However, due to the irregular nature of the property, replicating a consistent grid pattern was difficult. No grids were created larger than the initial size of 50' by 50'. Figure 2-1 has been included to depict the general site layout and the coordinate grid system discussed above.

2.4 Site Control Measures

The final step in site preparation consisted of establishing an exclusion zone which utilized the existing chain link fence and also necessitated the construction of a temporary high visibility fence between the property and Holmden Avenue. At this entrance to the property, signs were erected alerting residents of lead associated hazards and warning trespassers that entry onto the property would not be allowed.

Establishment of exclusion zone

3.0 FIELD REMOVAL ACTIVITIES

The following section outlines the tasks associated with the removal activities at the Holmden Avenue property. Correspondence with and site visits by Ohio EPA Northeast District and the U.S. EPA Region 5 aided in developing the removal objectives and strategy.

3.1 Inaccessible Areas

During a site visit on November 4, 1997 by Mr. Bart Ray and Ms. Sheila Abraham both of the Ohio EPA's Northeast District Office and Mr. Ababi Harris of the U.S. EPA Region 5, clarification was reached on what the extent of the remediation area was to be. In a follow up correspondence (ENTACT 11/5/97 - Appendix H) to Mr. Harris of the U.S. EPA, the extent of remediation was stated to be confined to areas that were accessible to humans or equipment and those areas not covered by concrete debris.

Although no removal was necessary in the aforementioned areas, sampling was conducted to determine the extent of contamination in areas where removal activities could not be carried through to fruition.

3.1.1 Analytical Extent of Contamination

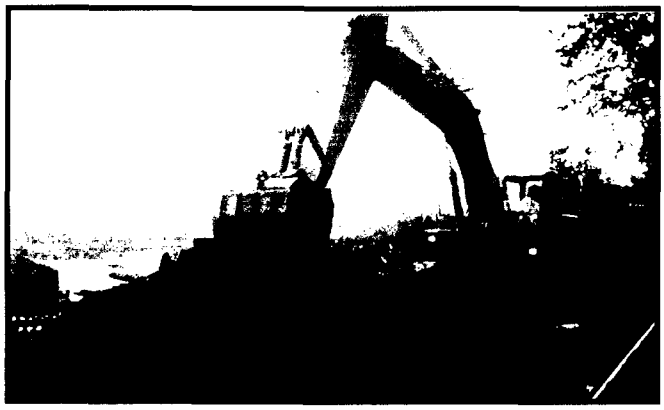
Removal activities progressed by removing contaminated soil in areas that could be reached by excavating with a track hoe. Areas outside the reach of the excavator (areas greater than 35 feet from the heel of the slope), were sampled to determine the total lead concentrations present. Table 3-1 shows results from this sampling. Results obtained are consistent with the initial assumption that contamination was primarily confined to the upper portion of the slope and the level area comprising the majority of the property. Grids that were inaccessible to equipment or were covered with concrete debris, thereby eliminating the possibility of removal, are depicted with the appropriate total lead concentration on Figure 3-1 as Extent of Contamination areas. No removal was conducted in these areas. However, as can be seen from Table 3-1, the results from laboratory analytical revealed no total lead concentrations above the clean-up level of 400 mg/kg.

3.2 Excavation

As mentioned previously the objective of the Holmden Avenue removal was to remove lead contaminated soils above the residential cleanup level of 400 mg/kg total lead. ENTACT crew members completed this objective by guiding excavation activities with a field portable x- ray fluorescence (XRF) analyzer. This results in more efficient contaminant removal by eliminating the removal of soils already below the clean up level of 400 mg/kg total lead. The XRF analyzer yields a total lead value within one minute, which diminishes the waiting necessarily associated with laboratory turn-around of soil samples.

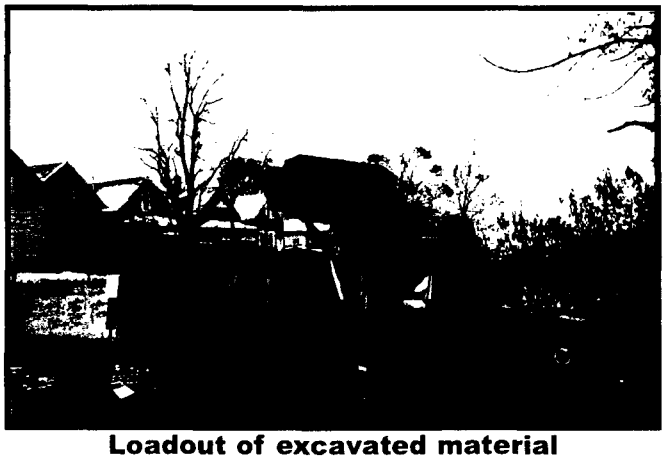
XRF guided removal activities

Removal activities commenced with excavation of surficial soils located in the western parcel of the property. Excavation began in each area by initially removing contaminated soils from the top 1/3 of the slope, then excavating soil above 400 mg/kg on the flat portion of the property. Soils in the western portion were excavated first then work progressed east and then north towards Holmden Avenue.



Removal activities

As excavation progressed a front end loader was utilized to transport material from the excavation area directly to dump trucks for transportation to the Master Metals facility for storage. Single-axle and tri-axle dump trucks equipped with tarps were employed to transport the excavated soil to the storage area.



Loadout of excavated material

3.2.1 Excavation Verification

The XRF analyzer was utilized to screen soil in each of the individual grids. A minimum of three readings were collected via XRF analysis in each grid. When the soil in each grid was determined to be below 400 mg/kg total lead a sample was then collected for laboratory confirmation. This sample was collected by compositing areas within the grid and homogenizing the soil aliquot prior to actual placement into a laboratory provided glass sample container. Each individual sample was then labeled and prepared for proper shipment to Ross Analytical Services in Strongsville, Ohio for analysis. Laboratory analytical data for excavation verification and extent of contamination is included in Appendix A.

After receiving the initial laboratory analytical results, grid B4 yielded a total lead value of 446 mg/kg. Surficial soils from this grid were excavated an additional 6 inches and three samples were collected for total lead analysis. Sample results were well below the removal objective of 400 mg/kg (61.2 mg/kg, 56.9 mg/kg, and 16.3 mg/kg). Verification results for XRF screening, designated by the grid number, are reported in Table 3-2 and full XRF data, including daily calibration information, is included in Appendix B. Table 3-3 contains results of the laboratory analytical for excavation verification which have the sample designation VS-E-2, where E2 is the grid. Figure 3-1 depicts the sampling grid utilized for the removal action with the associated laboratory analytical results for each grid.

3.3 Engineering Controls

During removal activities at the Holmden Avenue property, control of dust emissions was of great concern. Fortunately, weather conditions during excavation and transportation were advantageous for dust suppression. However, if wind or soil conditions worsened, ENTACT crew members utilized misting equipment to greatly reduce the potential for off site migration of dust particles.

Stormwater management was also a priority on site. Prevention of contaminated stormwater runoff from the excavated soil was achieved by erecting silt fence during removal in key areas and covering the excavated soil with a 6 mil polyethylene cover during periods of inactivity.

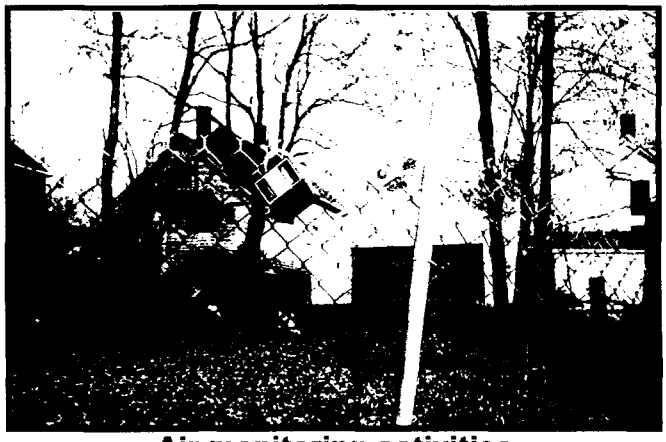
3.4 Air Sampling Procedures

Air sampling for the removal activities was conducted utilizing low volume personal/area air samplers with 0.8 micron MCE cassettes. Sampling of perimeter ambient air consisted of positioning two samplers at the periphery of the exclusion zone. One located in an upwind position and another sited in a downwind locale for the purpose of determining potential off site dust migration.

Additional low volume air samplers were assigned to ENTACT crew members working directly within the exclusion zone. These samples were sent to ATC & Associates Laboratory in Indianapolis, Indiana daily for analysis.

Both perimeter air samples and personnel air quality samples have the designation AS-00 with the numerical suffix beginning with 01 and continuing in one unit increments until removal activities were complete (i.e. AS-01, AS-02, etc.). Air quality results have been tabulated for reporting purposes in Table 3-4 and laboratory analytical is included in Appendix C. For reference personnel air quality data are included in the laboratory analytical included in the aforementioned appendix.

Air sampling results collected during the first day of excavation activities resulted in a downwind value of 2.8 $\mu g/m^3$. After instituting corrective action for dust suppression with the on-site misting units, no additional exceedances of the ambient air quality level were encountered.



Air monitoring activities

4.0 STABILIZATION/TREATMENT

Excavated soil from the Holmden Avenue property, after transportation to the Master Metals facility, required specific handling and sampling demands to determine end use. The following section describes the specific steps taken to execute the stabilization process.

4.1 Temporary Soil Storage

The on-site tank containment unit used during the Time Critical Removal Action for the Master Metals facility was reconstructed for temporary storage of excavated soil from the Holmden Avenue property. Temporary storage was necessary while awaiting analytical results.

Temporary soil storage area

4.1.1 Excavated Soil Characterization

After initial removal and load out of excavated soil, stockpiled soil was then sampled for hazardous characteristics. The soil was segregated into 200 yd^3 subpiles for sampling. One grab sample was collected from each subpile and analyzed for TCLP lead and total lead. A total of eight characterization samples were collected. These samples were submitted to Ross Analytical Services in Strongsville, Ohio for analysis. Tabulated sample results are included in Table 4-1 with the unique identifier US-00. Laboratory analytical from the characterization sampling is included in Appendix D. The objective of this sampling was to determine the total lead concentration in the soil and to ascertain which subpiles, if any, would require treatment.

4.2 Additive mixture

After receipt of soil characterization analysis, it was determined that the majority of the excavated soil from the removal activities required treatment. Seven of the eight samples collected failed the TCLP analysis for lead. Treatability results from the soil excavated at the Master Metals facility (Treatability Study Report, Master Metals Site, ENTACT, Inc. September 2, 1997) were utilized to determine the correct additive mixture based on the similar origins of both media. Soils from the Master Metals facility yielded higher total lead concentrations and TCLP values than those excavated from the Holmden Avenue property, nevertheless, to institute a conservative treatment approach, additive ratios remained consistent to ensure complete treatment.

4.3 Treatment to Non-Hazardous Levels

Soil treatment was conducted directly in the tank containment unit to prevent contaminant migration to the surrounding concrete. Treatment additive was incorporated into the soil matrix immediately upon arrival on site. Thorough mixing was achieved by the use of an excavator to blend the additive into the soil matrix.

4.3.1 Treatment Verification

After the Holmden Avenue soil was treated, the stockpile was again sectioned into 200 yd^3 subpiles for treatment verification. Verification was carried out by collecting one grab sample from each 200 yd^3 subpile. Each sample was then submitted to Ross Analytical Services for TCLP lead analysis. Verification was completed if the analytical samples

were below 5 mg/L for TCLP lead. Due to the aggressive treatment strategy, all verification results from laboratory analysis yielded TCLP lead values below 5 mg/L indicating successful treatment to non-hazardous levels. Results are shown in Table 4-2 with the sample designation TS-00; and, the corresponding analytical data is located in Appendix E.

Secured, stockpiled material on-site

4.4 Material Storage Pending End Use Determination

Immediately following treatment and the subsequent collection of verification samples, the stockpiled soil was covered for temporary storage with 6 mil polyethylene and anchored to prevent cover loss. This storage technique will prevent contaminant migration due to wind and water erosion until the ultimate disposal has been determined.

5.0 SITE RESTORATION

After the completion of all field removal activities, project focus shifted towards restoring the residential property to its original state. Original site conditions, however, were poor with regard to site drainage and grading. Taking this into consideration, ENTACT crew members corrected these conditions during restoration activities. A cross-sectional view of the resulting end state of final site restoration activities is depicted in Figure 5-1.

5.1 Backfill

Prior to the completion of removal activities at the Holmden Avenue property, sources were identified that could provide the necessary quantity and quality of fill material for the residential site. Initially, two sources were located and inspected. One sample from each source was collected and analyzed for the following:

-Total Metals

- Arsenic
- Barium
- Cadmium
- Chromium
- Lead
- Silver
- Selenium
- Mercury

-Pesticides

-Soil pH

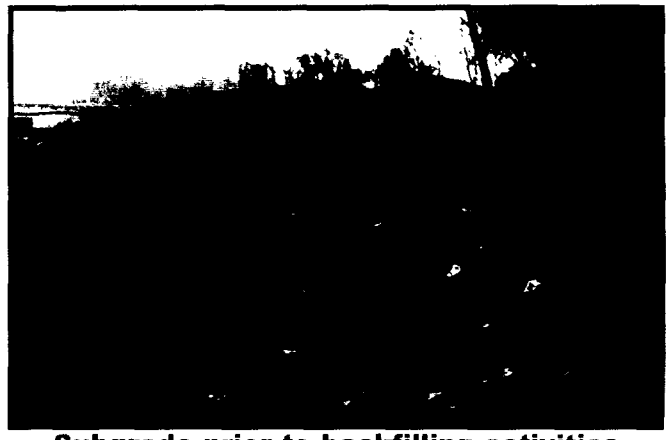
-Total Petroleum Hydrocarbons

Grab samples were collected directly from the clean backfill source locations and specifically from the area anticipated to be providing the fill material for the removal action. Backfill samples are identified with the sample designation BF-000.

Analytical results (contained in Appendix F) from the initial sources revealed that the fill material contained elevated levels of Total Petroleum Hydrocarbons (>120 mg/kg) and slightly elevated levels of several pesticides. Two additional backfill sources were then identified that could provide the necessary quantity of fill material. Both sources were sampled in the manner outlined above and analyzed for the aforementioned parameters. Analytical results for this second set of backfill samples yielded acceptable results. The data for these samples is compiled in Appendix G.

Two sources were ultimately utilized for fill material after the initial sources were determined to be unusable. One source, Silver Oak Land Development in Solon, Ohio, provided fill clay and Kurtz Brothers in Cleveland, Ohio supplied top soil for the vegetative cover layer. Examples of material tickets from each of the backfill sources are attached in Appendix I with the remainder of the material tickets being stored on file in ENTACT's file repository.

Immediately following excavation and receipt of analytical verification, the exposed soil was cut and



Subgrade prior to backfilling activities

graded to provide a suitable base for backfill placement. After this subgrade was established, clay fill was imported to raise the excavated area back to its original elevation. This clay layer was placed in a 10-12 inch lift over the flat portion of the excavated area. Completing the backfill activities consisted of

importing the top soil required for the vegetative cover. Top soil installation involved the addition of a 4-6 inch layer over the entire excavated area including the excavated slopes.

re-seeded along with the addition of fertilizer. In order to maintain the site conditions after restoration activities, proper stormwater management controls have been implemented to reduce the

Restoration activities

Placement of matting fabric

5.2 Erosion Control

After restoring the original elevation and creating a good drainage pattern on site, the entire area was seeded to provide a vegetative cover. The area was seeded with a fescue, rye, and bluegrass seed mixture. Due to late seeding no fertilizer was added to the top soil. If an acceptable strand of grass has not been established by late spring, the area will be

destructive nature of runoff and runon. Silt fence was installed in areas susceptible to water erosion. In addition to the silt fence, a biodegradable erosion control matting was installed over all backfilled and seeded areas to reduce the loss of the top soil cover and to aid grass germination.

Seeding activities

Installation of silt fence

6.0 CONCLUSION

ENTACT crew members completed all objectives of the Holmden Avenue removal action in a quality-oriented and time effective manner while minimizing disturbance to the surrounding residential community. Contaminated soils above the clean-up level of 400 mg/kg were removed from the accessible areas on site. Material was safely transported to the Master Metals facility for treatment and storage. Excavated soils were successfully treated to below current regulatory levels and below the anticipated Phase IV Land Disposal Restriction level of 0.75 mg/L TCLP lead.

Performance of all removal activities occurred with the health and safety of the surrounding residents and ENTACT associates in full consideration. In addition, site restoration activities focused on returning the property to an improved state with regard to its original condition. Engineering controls for stormwater management were instituted at the site to maintain the current condition of the property while the vegetative cover is established.

ENTACT's execution of this removal action has been completed in full compliance with the issued administrative order and all activities were conducted in a manner which has provided for a safe, efficient and effective remedial solution.

TOPOGRAPHIC SITE LOCATION

Master Metals Site - Holmden Ave.
Cleveland, Ohio

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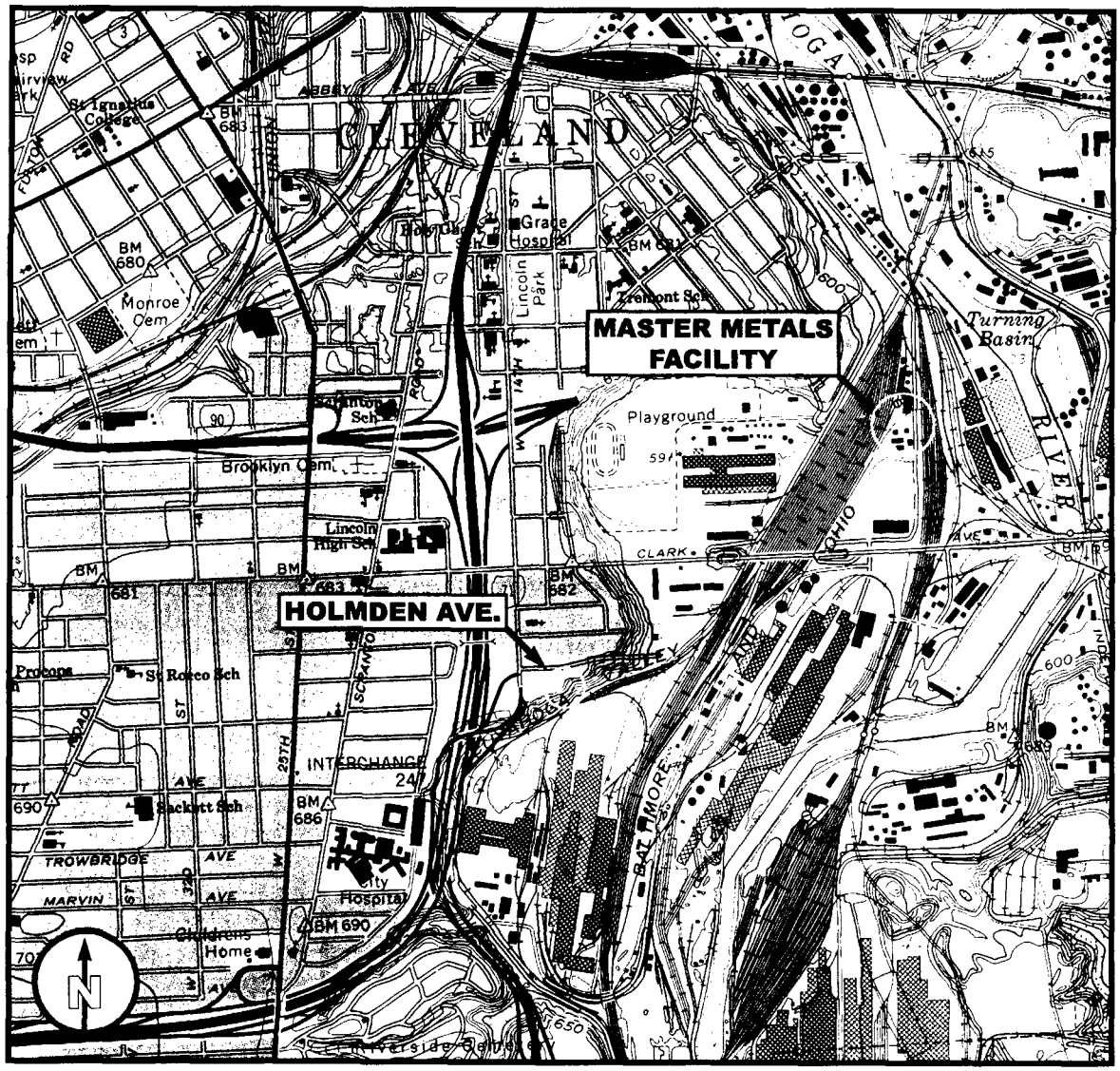
CLEVELAND SOUTH QUADRANGLE OHIO-CUYAHOGA CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)



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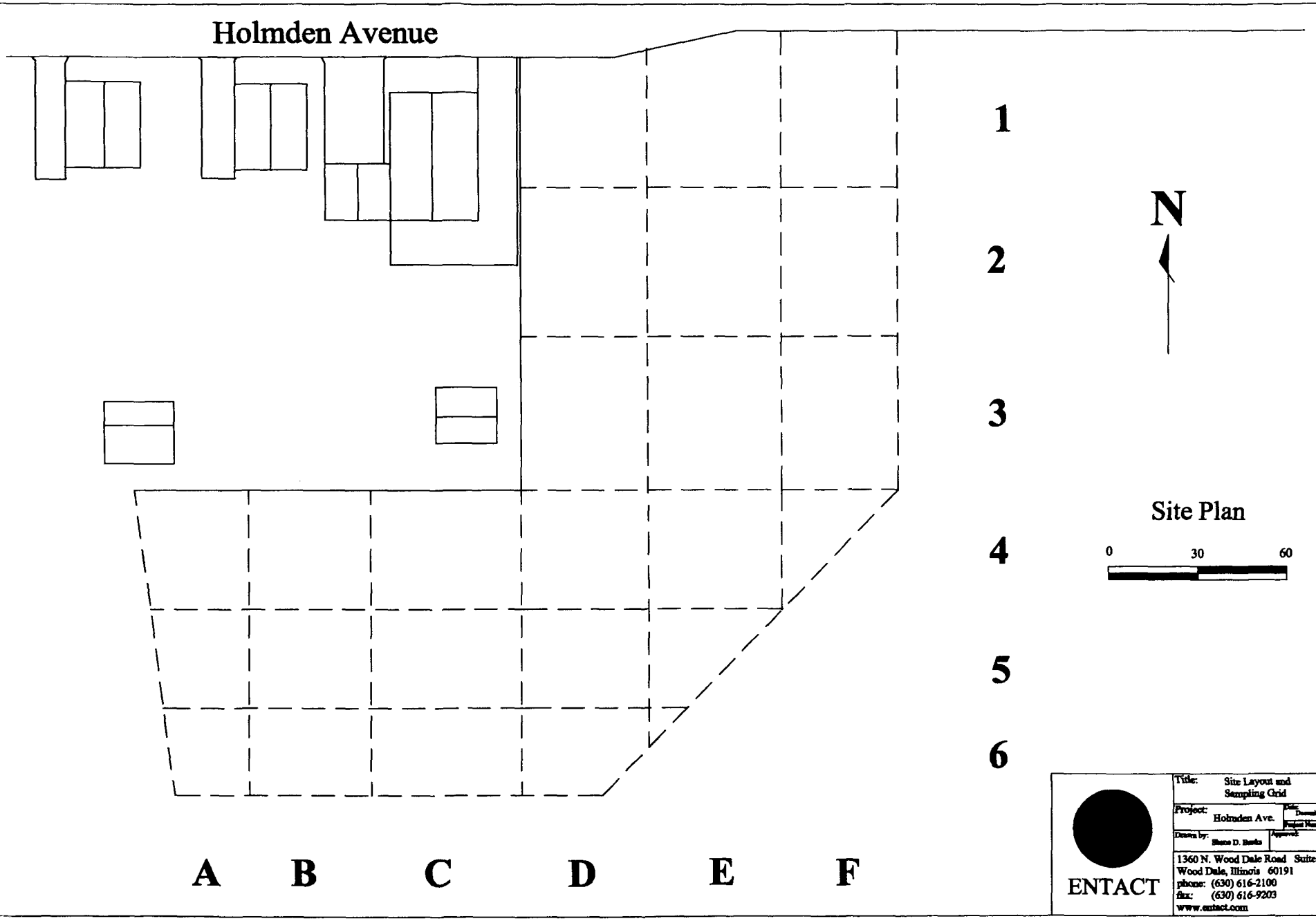
CONTOUR INTERVAL 10 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1929
DEPTH CURVES AND SOUNDINGS IN FEET—DATUM IS LOW WATER 570.5 FEET

MN GN
6½° 0°27'
116 MILS 8 MILS

UTM GRID AND 1984 MAGNETIC NORTH DECLINATION AT CENTER OF SHEET

THIS MAP COMPLIES WITH NATIONAL MAP ACCURACY STANDARDS
FOR SALE BY U. S. GEOLOGICAL SURVEY
DENVER, COLORADO 80225, OR RESTON, VIRGINIA 22092
A FOLDER DESCRIBING TOPOGRAPHIC MAPS AND SYMBOLS IS AVAILABLE ON REQUEST

Figure 1-1



ENTACT

Title: Site Layout and Sampling Grid

Figure: 2-1

Project: Holmden Ave.

Date: December 14, 1997

Project Number: C176

Drawn by: Shane D. Banks

Approved:

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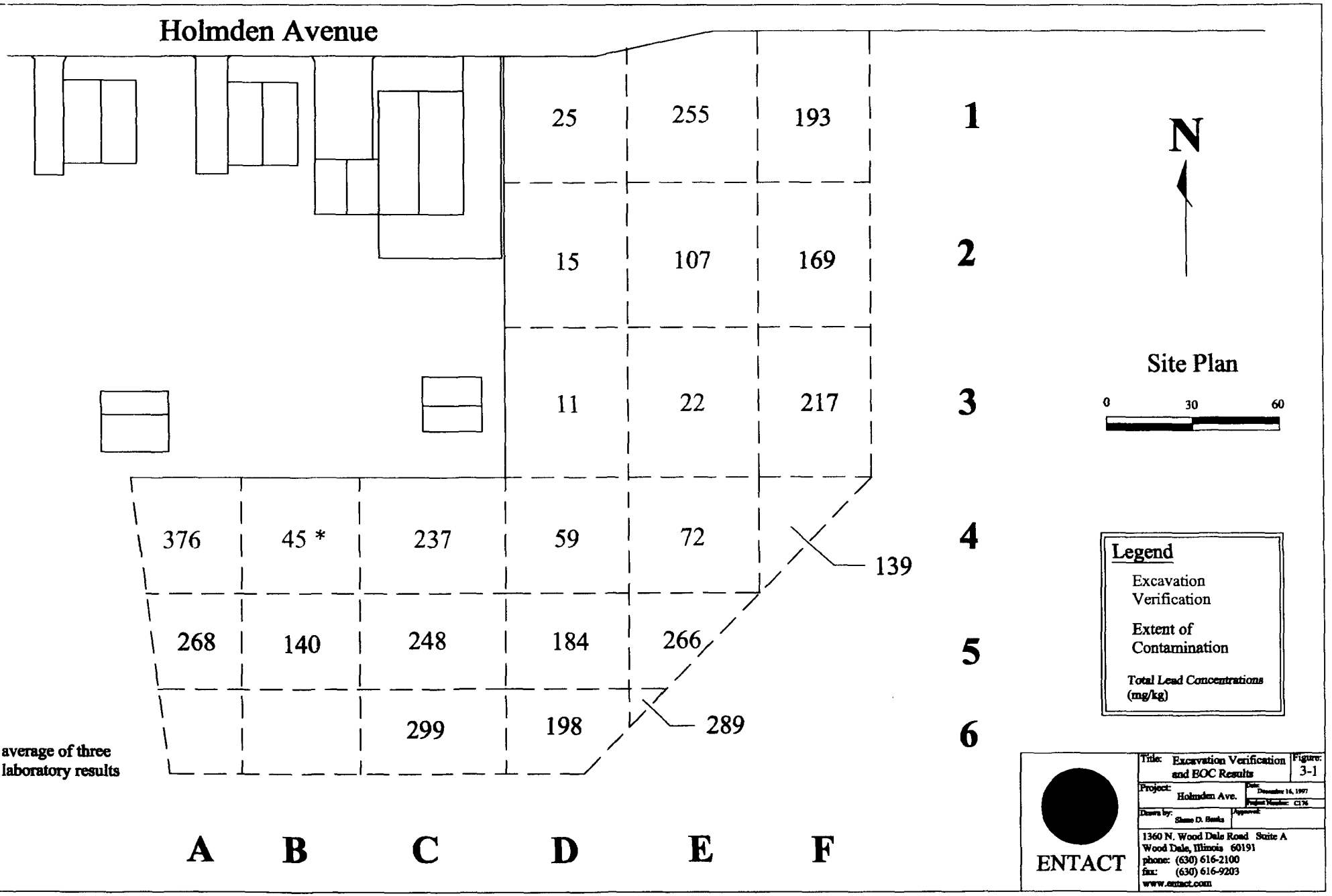
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Legend
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Extent of Contamination
Total Lead Concentrations (mg/kg)
* average of three laboratory results
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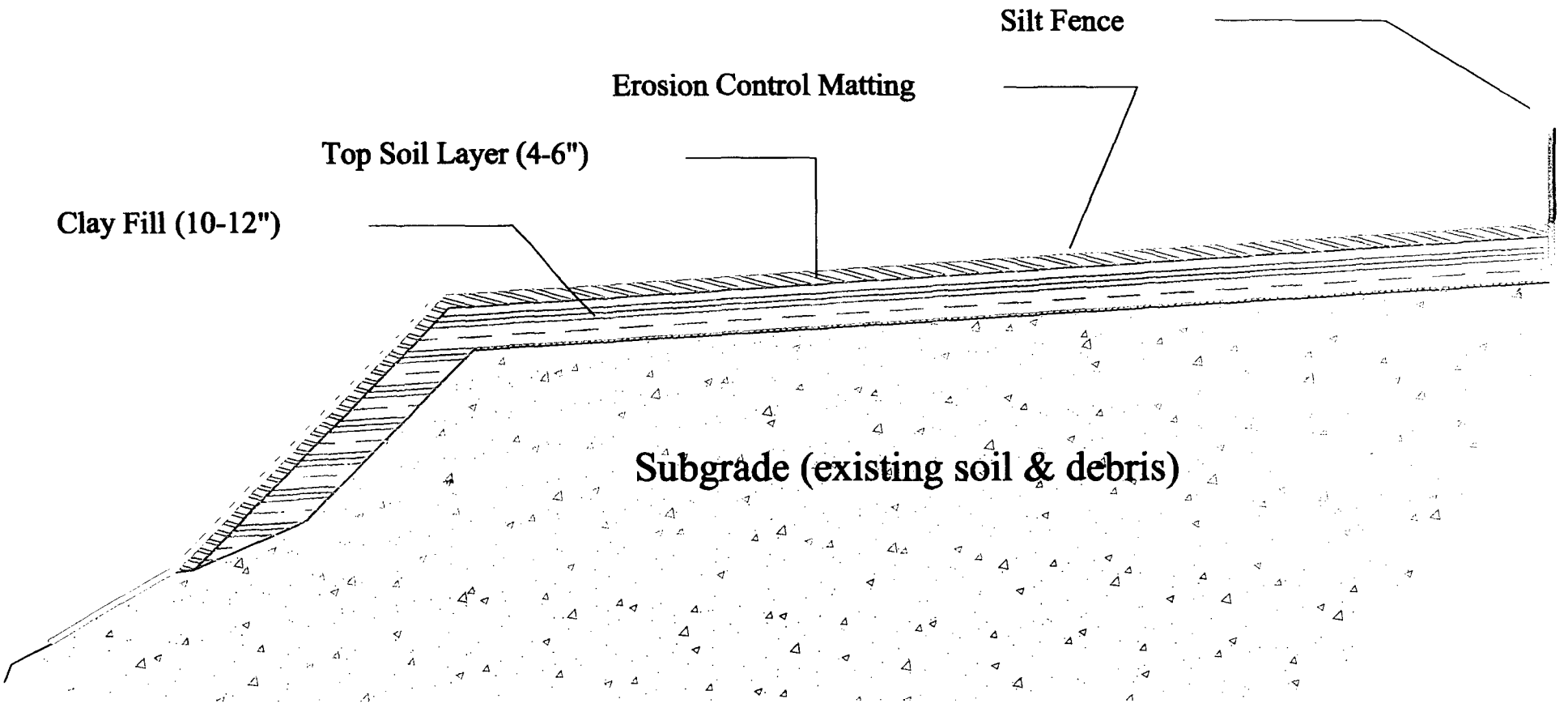

Not to Scale

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Title: Site Restoration Detail		Figure: 5-1
Project: Holmden Ave.	Date: January 29, 1998	
Drawn by: Shane D. Banks	Project Number: C176	Approved:

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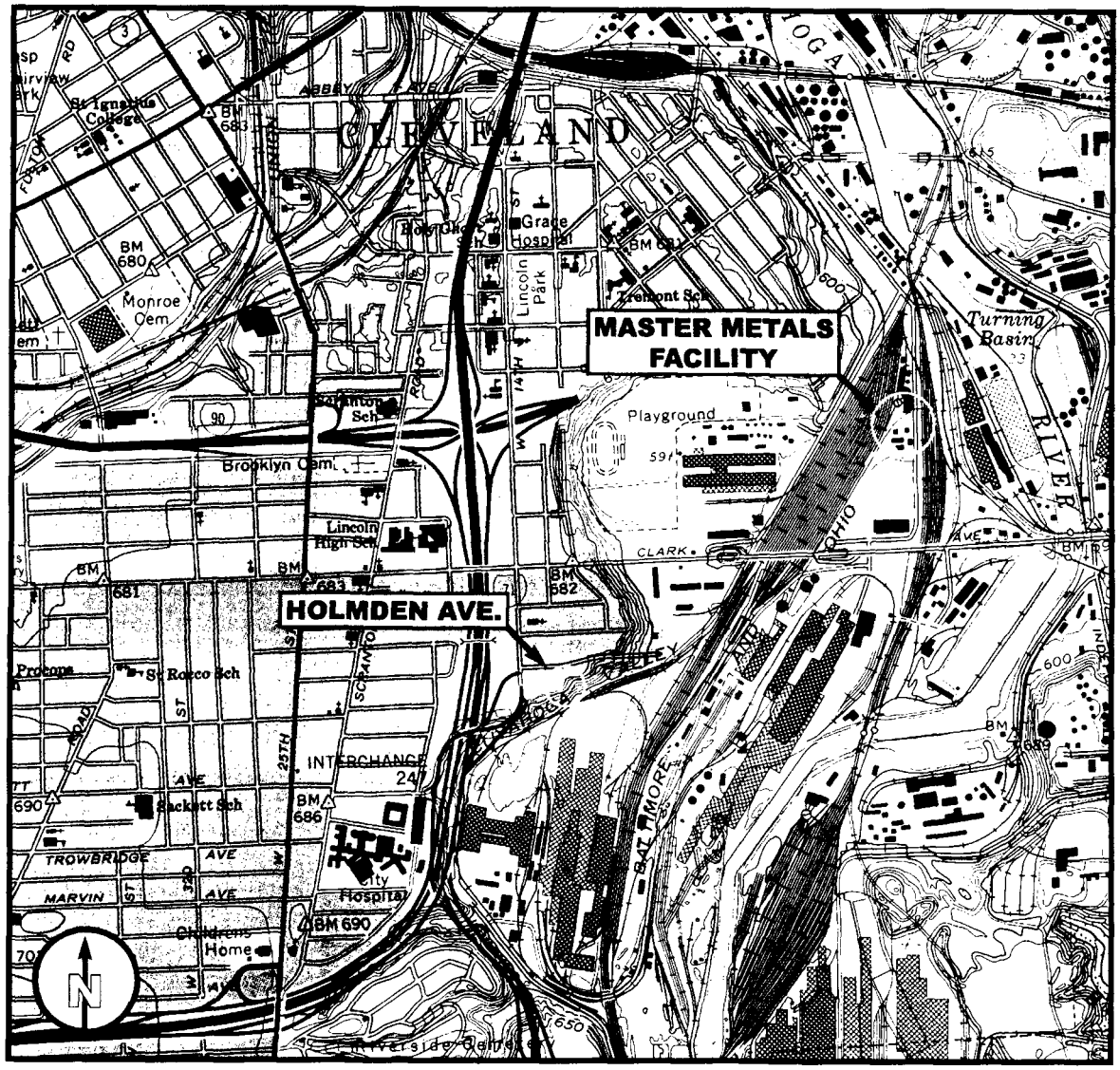

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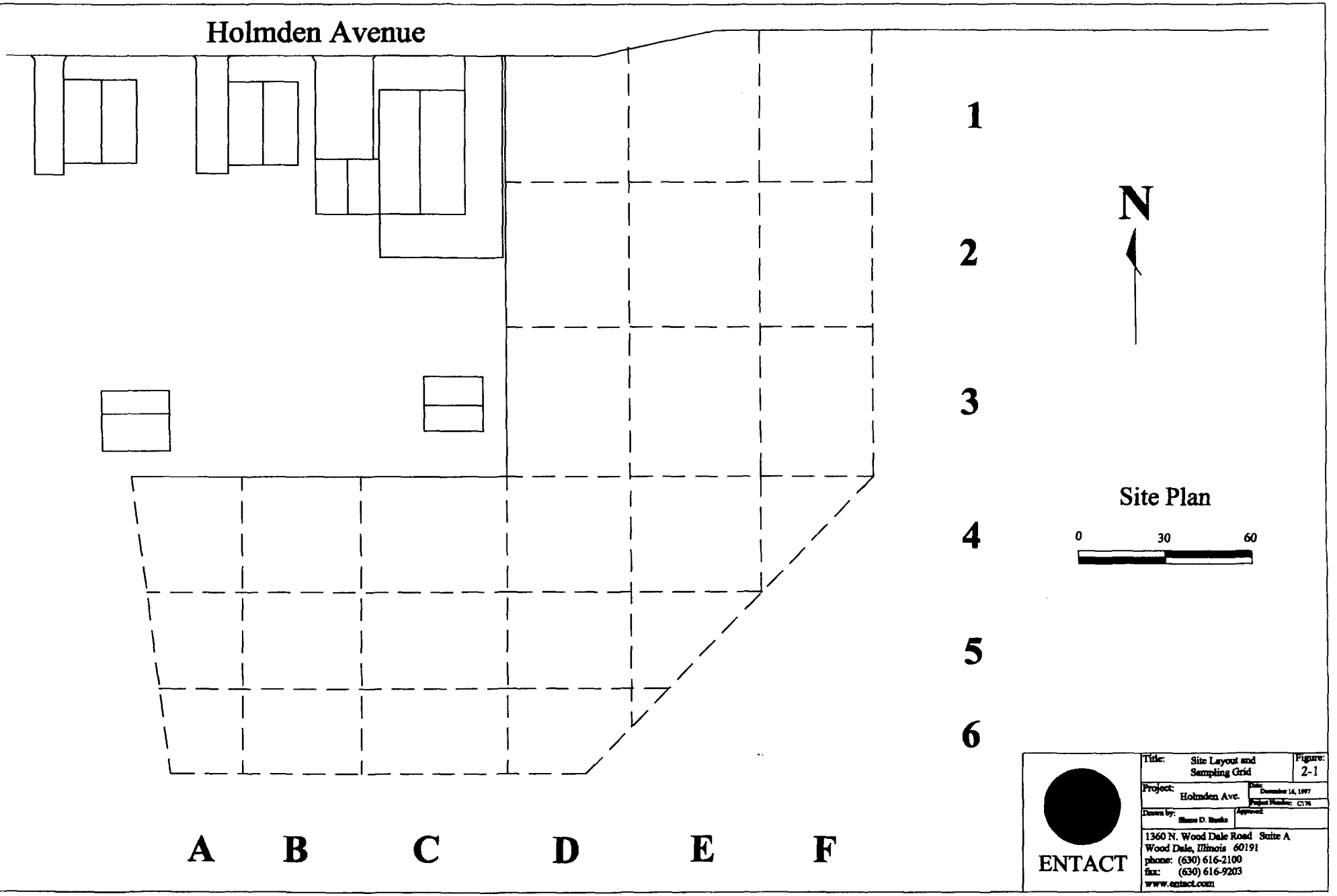
Holmden Avenue
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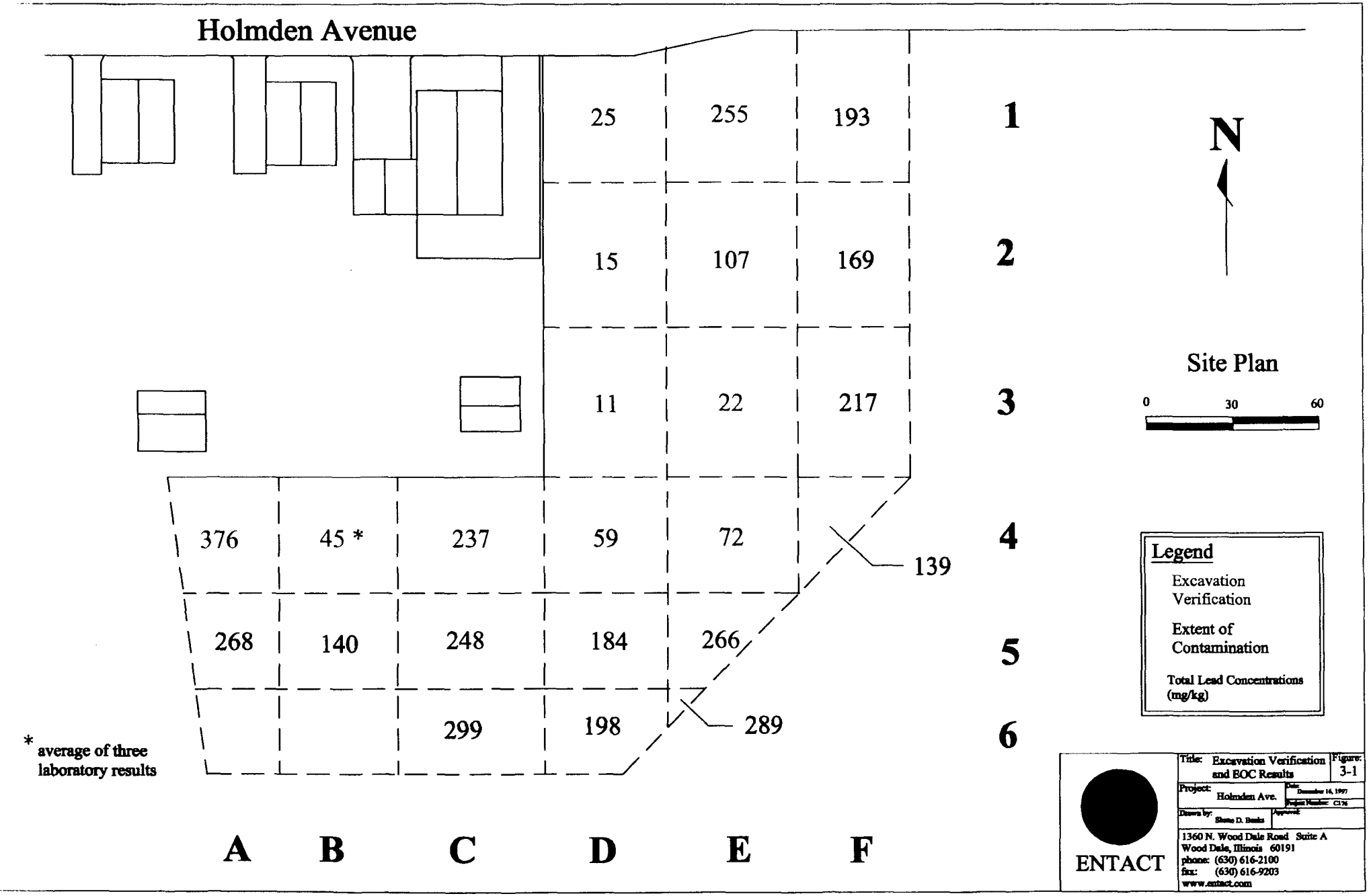
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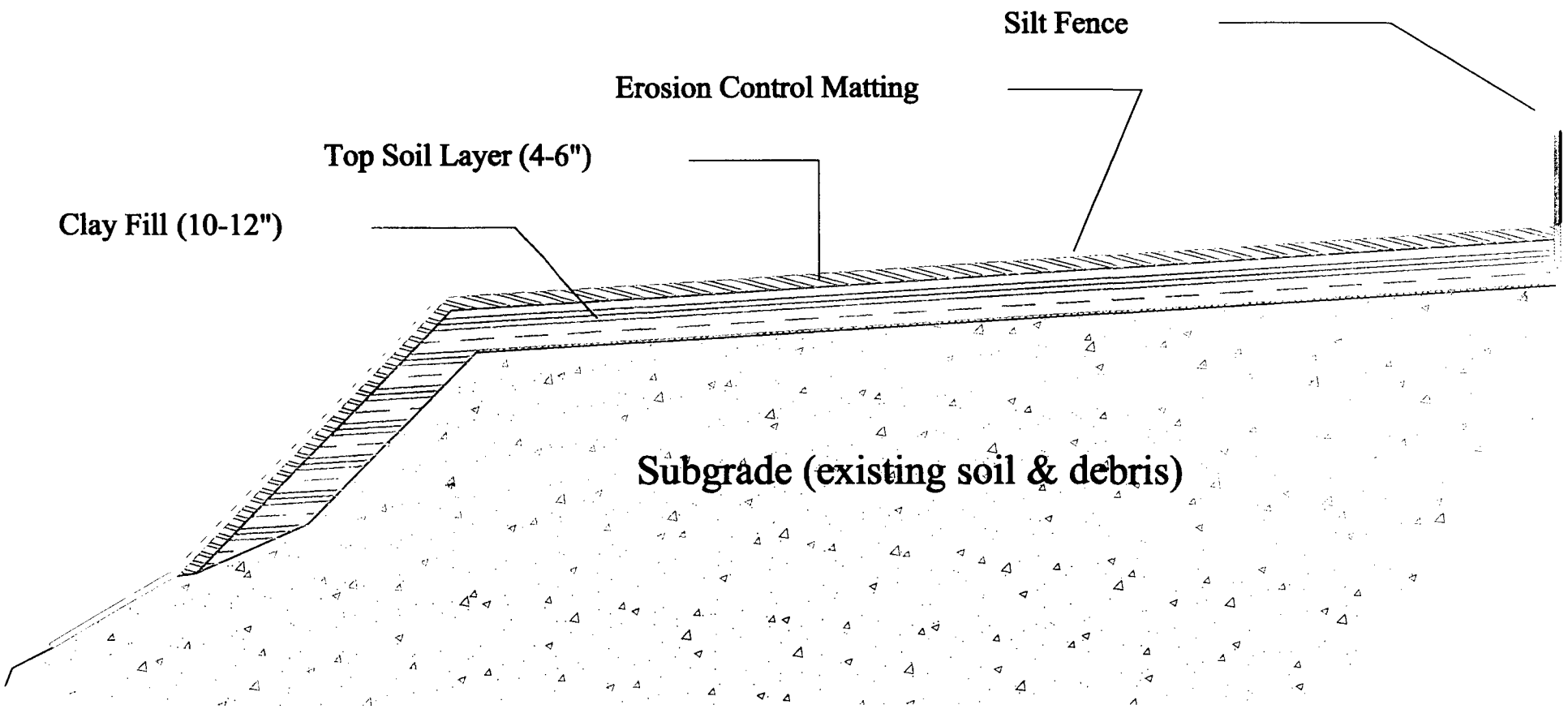

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Date	Sample ID	Total Pb Result (mg/kg)
11/17/97	VS-F-2	169
11/17/97	VS-C-6	299
11/17/97	VS-B-5	140
11/17/97	VS-F-3	217
11/17/97	VS-A-5	268
11/17/97	VS-E-6	289
11/17/97	VS-F-1	193
11/17/97	VS-D-6	198
11/17/97	VS-F-4	139

Grid	Average XRF result (Total lead) (mg/kg)	Depth (inches)	Removal Comments
A4	82	36	excavated
A5	184	surface	extent of contamination
B4	319	24	excavated
B5	59	surface	extent of contamination
C4	82	12-18	excavated
C5	124	6	excavated
C6	164	surface	extent of contamination
D1	25	6-12	excavated
D2	31	6-12	excavated
D3	ND	6	excavated
D4	37	6-12	excavated
D5	153	6-12	excavated
D6	223	surface	extent of contamination
E1	199	6-12	excavated
E2	51	6-12	excavated
E3	ND	6-12	excavated
E4	25	6-12	excavated
E5	183	6-12	excavated
E6	156	surface	extent of contamination
F1	69	surface	extent of contamination
F2	97	surface	extent of contamination
F3	228	surface	extent of contamination
F4	94	surface	extent of contamination

Date	Sample ID	Total Pb Result (mg/kg)
11/17/97	VS-E-2	107
11/17/97	VS-E-3	22.3
11/17/97	VS-C-5	248
11/17/97	VS-C-4	237
11/17/97	VS-B-4	446
11/17/97	VS-D-2	14.6
11/17/97	VS-A-4	376
11/17/97	VS-D-1	25.0
11/17/97	VS-D-3	11.0
11/18/97	VS-E-5	266
11/18/97	VS-D-5	184
11/18/97	VS-E-1	255
11/18/97	VS-E-4	72.3
11/18/97	VS-D-4	58.6
11/19/97	VS-B-4-a	61.2
11/19/97	VS-B-4-b	56.9
11/19/97	VS-B-4-c	16.3

Perimeter Air Sampling

Date	Sample ID	Total Pb (µg/m3)	Location
11/13/97	AS-01	2.8	downwind
11/13/97	AS-03	<2.0	upwind
11/14/97	AS-04	<2.0	upwind
11/14/97	AS-05	<2.0	downwind
11/17/97	AS-08	<2.0	upwind
11/17/97	AS-09	<2.0	downwind
11/19/97	AS-10	<2.0	upwind
11/19/97	AS-11	<2.0	downwind
11/20/97	AS-13	<2.0	upwind
11/20/97	AS-15	<2.0	downwind

Date	Sample ID	Total Pb Result (mg/kg)	TCLP Pb Results (mg/L)
11/19/97	US-01	2,030	19.9
11/19/97	US-02	1,850	5.56
11/19/97	US-03	1,460	9.63
11/19/97	US-04	2,880	8.94
11/19/97	US-05	3,190	16.2
11/19/97	US-06	4,310	56.0
11/19/97	US-07	1,720	5.93
11/19/97	US-08	1,040	4.21

Date	Sample ID	TCLP Pb Result (mg/L)
12/4/97	TS-01	<0.25
12/4/97	TS-02	<0.25
12/4/97	TS-03	0.720
12/4/97	TS-04	<0.25
12/4/97	TS-05	<0.25
12/4/97	TS-06	<0.25
12/4/97	TS-07	<0.25
12/4/97	TS-08	<0.25

Appendix A

Laboratory Analytical - Excavation Verification and Extent of Contamination Results

Ross Analytical Services, Inc.
16433 Foltz Industrial Parkway • Strongsville, Ohio 44136
(216) 572-3200 • Fax (216) 572-7620 • 1-800-325-7737

CERTIFICATE OF ANALYSIS

Client:

ENTACT
2850 W. 3rd Street
Cleveland, OH 44113

Attn: Shane Banks

Work Order #: 97-11-103
Client Code: ENTACT
Report Date: 11/18/97
Work ID: Soils for Total Lead
Date Received: 11/17/97

Purchase Order: C176

SAMPLE IDENTIFICATION

Lab Number	Sample Description	Lab Number	Sample Description
01	VS-E-2	02	VS-D-2
03	VS-E-3	04	VS-B-5
05	VS-C-5	06	VS-A-4
07	VS-C-4	08	VS-D-1
09	VS-B-4	10	VS-D-3
11	VS-F-2	12	VS-F-3
13	VS-C-6	14	VS-A-5

Enclosed are the analytical results for the samples listed above. Analyses were performed by the methods referenced in the Test Methodologies section, while any special circumstances are described in the Report Comments section. Unless otherwise noted, sample results are not moisture-corrected. Most analytes are reported relative to an Estimated Quantitation Limit (EQL), which is the lowest concentration that can be reliably measured under routine laboratory conditions. Questions or comments concerning the enclosed results should be directed to your Client Services Representative.

Certificate approved by
Carol L. Turner

TEST METHODOLOGIES

Metals were determined in solid and non-aqueous liquid samples by digestion with nitric acid, hydrogen peroxide, and hydrochloric acid as in EPA Method 3050A, followed by Inductively Coupled Plasma Emission Spectroscopy as in EPA Method 6010A, unless noted otherwise.

Lead by ICP **Method(s):** 6010A

Lab No.	Sample Description	Result	Units	EQL
01A	VS-E-2	107	mg/Kg	4.8
02A	VS-D-2	14.6	mg/Kg	4.9
03A	VS-E-3	22.3	mg/Kg	5.0
04A	VS-B-5	140	mg/Kg	4.8
05A	VS-C-5	248	mg/Kg	4.9
06A	VS-A-4	376	mg/Kg	4.8
07A	VS-C-4	237	mg/Kg	4.8
08A	VS-D-1	25.0	mg/Kg	4.8
09A	VS-B-4	446	mg/Kg	4.9
10A	VS-D-3	11.0	mg/Kg	4.7
11A	VS-F-2	169	mg/Kg	5.0
12A	VS-F-3	217	mg/Kg	4.9
13A	VS-C-6	299	mg/Kg	5.0
14A	VS-A-5	268	mg/Kg	4.9

CHAIN OF CUSTODY

97-11-103

Sampler: Banks Job #: C176

ENTACT Contact: S. Banks Date: 11/17/97

ENTACT
1360 N. Wood Dale Rd. Suite A
Wood Dale, Illinois 60191
Ph. 630/616-2100 Fax 630/616-9203

Turnaround Time Requested
24 Hour [X] 48 Hour [ ] 3 Day [ ] Normal [ ] Other [ ]

Sample No.	Matrix	Composite or Grab	Description/Remarks	Preservative	Analysis
VS-7-2	Soil	grab	excavation verification samples	none	A
VS-7-3	Soil	grab			A
VS-C-6	Soil	grab			A
VS-A-3	Soil	grab			A

Samples Relinquished By: Shan B 11/17/97 Date

Samples Received By: 11/17/97 Date

Samples Relinquished By: _____ Date

Samples Received By: _____ Date

Samples Relinquished By: _____ Date

ANALYSIS

A= Total Pb F= _____

B= _____ G= _____

C= _____ H= _____

D= _____ I= _____

E= _____ J= _____

Condition of Sample Upon Receipt:

Bottles Intact? (Yes) / No	Volatiles Free of Headspace? Yes / No	COC Seals Present and Intact? (Yes) / No

Distribution:

Original - To Customer w/ Final Report
2nd Copy - To Job File
3rd Copy - To Lab

CHAIN OF CUSTODY 9711-103

ENTACT
1360 N. Wood Dale Rd. Suite A
Wood Dale, Illinois 60191
Ph. 630/616-2100 Fax 630/616-9203

Sampler: Banks Job #: C176

ENTACT Contact: Shane Banks Date: 11/17/97

Turnaround Time Requested
24 Hour [X] 48 Hour [ ] 3 Day [ ] Normal [ ] Other [ ]

Sample No.	Matrix	Composite or Grab	Description/Remarks	Preservative	Analysis
VS - E - 2	Soil	grab	excavation verification samples	none	A
VS - D - 2	Soil	grab			A
VS - E - 3	Soil	grab			A
VS - B - 5	Soil	grab			A
VS - C - 5	Soil	grab			A
VS - A - 4	Soil	grab			A
VS - C - 4	Soil	grab			A
VS - D - 1	Soil	grab			A
VS - B - 4	Soil	grab			A
VS - D - 3	Soil	grab			A

Samples Relinquished By: Shane Banks 11/17/97 Date

Samples Received By: [signature] 11/17/97 Date

Samples Relinquished By: _____ Date

Samples Received By: _____ Date

Samples Relinquished By: _____ Date

ANALYSIS

A= Total Pb F= _____

B= _____ G= _____

C= _____ H= _____

D= _____ I= _____

E= _____ J= _____

Condition of Sample Upon Receipt:

Bottles Intact? Yes / No	Volatiles Free of Headspace? Yes / No	COC Seals Present and Intact? Yes / No

Distribution:
Original - To Customer w/ Final Report
2nd Copy - To Job File
3rd Copy - To Lab

ROSS ANALYTICAL SERVICES, INC.

SAMPLE RECEIPT REPORT

WORKORDER # 97-11-103

RECEIVED BY: [signature] DATE/TIME: 11/17/97 1235 LOGIN DATE: 11/17/97

SAMPLES ARRIVED BY(Circle One) Fed-Ex UPS Other(specify) KARIM

SHIPPING DOCUMENTATION PRESENT? YES/NO
TRACKING NUMBER _____

SHIPPING CONTAINER INTACT? YES/NO (If no, explain below)

CUSTODY SEALS PRESENT? YES/NO
CUSTODY SEALS INTACT? YES/NO
Where? Cooler/Bottles
Seal Nos. _____

SAMPLE TEMPERATURE 10°C

AQUEOUS SAMPLES FOR METALS, pH < 2? YES/NO/NA

AQUEOUS SAMPLES FOR WET TESTS, pH < 2? YES/NO/NA

AQUEOUS SAMPLES FOR CYANIDE, pH > 12? YES/NO/NA

AQUEOUS SAMPLES FOR VOA'S PRESERVED WITH HCl? YES/NO/NA (From COC, Do not take pH)

OTHER PRESERVATION REQUIREMENTS MET? YES/NO/NA SPECIFY:

SAMPLES INTACT? YES/NO/NA (If no, explain below)

SHIPPING CONTAINER: (Circle) Ross Client
Date Returned N/A

COMMENTS:

Ross Analytical Services, Inc.
16433 Foltz Industrial Parkway • Strongsville, Ohio 44136
(216) 572-3200 • Fax (216) 572-7620 • 1-800-325-7737

CERTIFICATE OF ANALYSIS

Client:

ENTACT
2850 W. 3rd Street
Cleveland, OH 44113

Attn: Shane Banks

Work Order #: 97-11-109
Client Code: ENTACT
Report Date: 11/19/97
Work ID: Soils for Total Lead
Date Received: 11/18/97

Purchase Order: C176

SAMPLE IDENTIFICATION

Lab Number	Sample Description	Lab Number	Sample Description
01	VS-E-6	02	VS-E-5
03	VS-D-5	04	VS-F-1
05	VS-D-6	06	VS-E-1
07	VS-E-4	08	VS-D-4
09	VS-F-4		

Enclosed are the analytical results for the samples listed above. Analyses were performed by the methods referenced in the Test Methodologies section, while any special circumstances are described in the Report Comments section. Unless otherwise noted, sample results are not moisture-corrected. Most analytes are reported relative to an Estimated Quantitation Limit (EQL), which is the lowest concentration that can be reliably measured under routine laboratory conditions. Questions or comments concerning the enclosed results should be directed to your Client Services Representative.

Certificate approved by
Carol L. Turner

TEST METHODOLOGIES

Metals were determined in solid and non-aqueous liquid samples by digestion with nitric acid, hydrogen peroxide, and hydrochloric acid as in EPA Method 3050A, followed by Inductively Coupled Plasma Emission Spectroscopy as in EPA Method 6010A, unless noted otherwise.

Lead by ICP **Method(s):** 6010A

Lab No.	Sample Description	Result	Units	EQL
01A	VS-E-6	289	mg/Kg	5.0
02A	VS-E-5	266	mg/Kg	4.8
03A	VS-D-5	184	mg/Kg	4.8
04A	VS-F-1	193	mg/Kg	5.0
05A	VS-D-6	198	mg/Kg	5.0
06A	VS-E-1	255	mg/Kg	5.0
07A	VS-E-4	72.3	mg/Kg	4.9
08A	VS-D-4	58.6	mg/Kg	5.0
09A	VS-F-4	139	mg/Kg	4.8

CHAIN OF CUSTODY

9211-109

ENTACT

1360 N. Wood Dale Rd. Suite A
Wood Dale, Illinois 60191
Ph. 630/616-2100 Fax 630/616-9203

Sampler: Banks / Hutchins Job #: C176

ENTACT Contact: Shane Banks Date: 11/17/97

Turnaround Time Requested

Rush
24 Hour [X] 48 Hour [ ] 3 Day [ ] Normal [ ] Other [ ] _____

Sample No.	Matrix	Composite or Grab	Description/Remarks	Preservative	Analysis
VS - E - 1	Soil	grab	excavation verification	none	A
VS - E - 5	Soil	grab		none	A
VS - D - 5	Soil	grab		none	A
VS - D - 1	Soil	grab		none	A
VS - D - 6	Soil	grab		none	A
VS - E - 1	Soil	grab		none	A
VS - E - 4	Soil	grab		none	A
VS - D - 4	Soil	grab		none	A
VS - E - 4	Soil	grab		none	A

Samples Relinquished By: Tracy Dain 11-17-97 Date

Samples Received By: Dale Grimm 11/17/97 Date

Samples Relinquished By: _____ Date

Samples Received By: _____ 11/18/97 Date

Samples Relinquished By: _____ Date

ANALYSIS

A= Total Pb F= _____

B= _____ G= _____

C= _____ H= _____

D= _____ I= _____

E= _____ J= _____

Condition of Sample Upon Receipt:

Bottles Intact? Yes / No	Volatiles Free of Headspace? Yes / No	COC Seals Present and Intact? Yes / No

Distribution:

Original - To Customer w/ Final Report
2nd Copy - To Job File
3rd Copy - To Lab

ROSS ANALYTICAL SERVICES, INC.

SAMPLE RECEIPT REPORT

WORKORDER # 97-11-108,109

RECEIVED BY: [signature] DATE/TIME: 11/17/97 4:45 PM LOGIN DATE: 11/18/97

SAMPLES ARRIVED BY(Circle One) Fed–Ex UPS (Other(specify) Client

SHIPPING DOCUMENTATION PRESENT? YES/NO
TRACKING NUMBER _____

SHIPPING CONTAINER INTACT? (YES/NO (If no, explain below)

CUSTODY SEALS PRESENT? (YES/NO
CUSTODY SEALS INTACT? YES/NO
Where? Cooler/Bottles
Seal Nos. _____

SAMPLE TEMPERATURE 6°C

AQUEOUS SAMPLES FOR METALS, pH < 2? YES/NO/(NA)

AQUEOUS SAMPLES FOR WET TESTS, pH < 2? YES/NO/(NA)

AQUEOUS SAMPLES FOR CYANIDE, pH > 12? YES/NO/(NA)

AQUEOUS SAMPLES FOR VOA'S PRESERVED WITH HCl? YES/NO/(NA) (From COC. Do not take pH)

OTHER PRESERVATION REQUIREMENTS MET? YES/NO/(NA) SPECIFY:

SAMPLES INTACT? (YES/NO/NA (If no, explain below)

SHIPPING CONTAINER: (Circle) Ross Client
Date Returned N/A

COMMENTS:

ROSS Ross Analytical Services, Inc.
16433 Foltz Industrial Parkway • Strongsville, Ohio 44136
(216) 572-3200 • Fax (216) 572-7620 • 1-800-325-7737

CERTIFICATE OF ANALYSIS

Client:

ENTACT
2850 W. 3rd Street
Cleveland, OH 44113

Attn: Shane Banks

Work Order #: 97-11-127
Client Code: ENTACT
Report Date: 11/20/97
Work ID: Soils for Total Lead
Date Received: 11/19/97

Purchase Order: C176

SAMPLE IDENTIFICATION

Lab Number	Sample Description	Lab Number	Sample Description
01	VS-B-4-a	02	VS-B-4-b
03	VS-B-4-c		

Enclosed are the analytical results for the samples listed above. Analyses were performed by the methods referenced in the Test Methodologies section, while any special circumstances are described in the Report Comments section. Unless otherwise noted, sample results are not moisture-corrected. Most analytes are reported relative to an Estimated Quantitation Limit (EQL), which is the lowest concentration that can be reliably measured under routine laboratory conditions. Questions or comments concerning the enclosed results should be directed to your Client Services Representative.

Certificate approved by
Carol L. Turner

TEST METHODOLOGIES

Metals were determined in solid and non-aqueous liquid samples by digestion with nitric acid, hydrogen peroxide, and hydrochloric acid as in EPA Method 3050A, followed by Inductively Coupled Plasma Emission Spectroscopy as in EPA Method 6010A, unless noted otherwise.

Lead by ICP **Method(s):** 6010A

Lab No.	Sample Description	Result	Units	EQL
01A	VS-B-4-a	81.2	mg/Kg	4.9
02A	VS-B-4-b	56.9	mg/Kg	4.9
03A	VS-B-4-c	16.3	mg/Kg	4.9

CHAIN OF CUSTODY

97-11-176

ENTACT

1360 N. Wood Dale Rd. Suite A
Wood Dale, Illinois 60191
Ph. 630/616-2100 Fax 630/616-9203

Sampler: Baukus Job #: C176

ENTACT Contact: S. Baukus Date: 11/19/97

rush
Turnaround Time Requested
24 Hour [X] 48 Hour [ ] 3 Day [ ] Normal [ ] Other [ ]

Sample No.	Matrix	Composite or Grab	Description/Remarks	Preservative	Analysis
VS-B-4-a	soil	grab	excavation verification	none	A
VS-B-4-b	soil	grab		none	A
VS-B-4-c	soil	grab		none	A

Samples Relinquished By: Shaebe 11/19/97 Date

Samples Received By: [illegible] 11/19/97 5:32pm Date

Samples Relinquished By: _____ Date

Samples Received By: _____ 11/20/97 Date

Samples Relinquished By: _____ Date

ANALYSIS

A= total Pb F= _____

B= _____ G= _____

C= _____ H= _____

D= _____ I= _____

E= _____ J= _____

Condition of Sample Upon Receipt:

Bottles Intact? Yes / No	Volatiles Free of Headspace? Yes / No	COC Seals Present and Intact? Yes / No

Distribution:

Original - To Customer w/ Final Report
2nd Copy - To Job File
3rd Copy - To Lab

Appendix B

Excavation Guidance - XRF Results and Calibration Information

Summary of XRF Results from Holmden Ave Removal

	XRF RESULT (LEAD) (ppm)			
GRID	1	2	3	
A4	92	72	ND	82
A5	118	305	130	184
B4	259	575	164	319
	303	369	246	
B5	57	62	ND	59
C4	186	144	119	82
C5	86	204	83	124
C6	177	142	173	164
D1	36	ND	ND	25
D2	32	24	38	31
D3	ND	ND	ND	ND
D4	28	64	ND	37
D5	194	108	157	153
D6	301	178	190	223
E1	252	147	199	199
E2	69	80	ND	51
E3	ND	ND	ND	ND
E4	20	35	ND	25
E5	213	174	163	183
E6	148	170	149	156
F1	110	ND	82	69
F2	69	125	ND	97
F3	170	225	121	228
		419	209	
F4	59	113	109	94

ENTACT

XRF Calibration/Standardization

Date:	11/13/97	Site:	Holmden Ave
Tech:	S. Banks	XRF Unit:	Q-53

Fe Sample

	Result	Goal	*Achieved*
Fe:	0.989444	0.98 < Fe < 1.20	yes or no

Teflon Sample

Element	Result	Std Dev	R/SD < 5
Zn	31	25.6	1.210938
Se	11	9.67	1.137539
Sr	3.2	2.38	1.344538
Hg	49	21	2.333333
Pb	9.3	8.92	1.042601
Sn	24	16	1.5
Ba	4.4	3.24	1.358025

Site Specific Calibration Standards

Standard	Actual	1	2	3	Average	Percent Difference
1	**140**	174	135	79	129	-7.62%
2	**580**	628	597	722	649	11.90%
3	**3030**	2890	3230	2940	3020	-0.33%
4	**6200**	5930	6380	6060	6123	-1.24%

Comments

ENTACT

XRF Calibration/Standardization

Date:	11/14/97	Site:	Holmden Ave
Tech:	M.Hutchins	XRF Unit:	Q-53

Fe Sample

	Result	Goal	*Achieved*
Fe:	1.01594	0.98 < Fe < 1.20	yes or no

Teflon Sample

Element	Result	Std Dev	R/SD < 5
Mo	7.8	2.16	3.611111
Ag	30	18.6	1.612903
Sr	11.3	2.71	4.169742
Sn	34	16.1	2.111801
Pb	23.1	9.45	2.444444
Ba	4.4	3.24	1.358025

Site Specific Calibration Standards

Standard	Actual	1	2	3	Average	Percent Difference
1	**140**	174	135	79	129	-7.62%
2	**580**	628	597	722	649	11.90%
3	**3030**	2890	3230	2940	3020	-0.33%
4	**6200**	5930	6380	6060	6123	-1.24%

Comments

ENTACT

XRF Calibration/Standardization

Date:	11/17/97	Site:	Holmden Ave
Tech:	S. Banks	XRF Unit:	Q-53

Fe Sample

	Result	Goal	*Achieved*
Fe:	1.00215	0.98 < Fe < 1.20	yes or no

Teflon Sample

Element	Result	Std Dev	R/SD < 5
Zn	35	25.4	1.377953
Se	12.2	9.56	1.276151
Sr	2.6	2.31	1.125541
Hg	27	20.2	1.336634
Pb	11.9	8.89	1.338583
Sn	39	16.2	2.407407
Ba	5.1	3.26	1.564417

Site Specific Calibration Standards

Standard	Actual	1	2	3	Average	Percent Difference
1	**140**	154	135	130	140	-0.24%
2	**580**	703	674	616	664	14.54%
3	**3030**	2450	2690	2510	2550	-15.84%
4	**6200**	6580	6570	6410	6520	5.16%

Comments

ENTACT

XRF Calibration/Standardization

Date:	11/19/97	Site:	Holmden Ave
Tech:	S. Banks	XRF Unit:	Q-53

Fe Sample

	Result	Goal	*Achieved*
Fe:	0.985168	0.98 < Fe < 1.20	yes or no

Teflon Sample

Element	Result	Std Dev	R/SD < 5
Zn	44	26.9	1.635688
CrLO	89	44.9	1.982183
Fe	95	70	1.357143
Co	111	65.1	1.705069
Th	15.9	4.71	3.375796
Zr	3.4	2.17	1.56682
Sr	8.1	2.66	3.045113
Hg	48	21.7	2.211982
Sb	16	10.8	1.481481
Ba	8.9	3.31	2.688822

Site Specific Calibration Standards

Standard	Actual	1	2	3	Average	Percent Difference
1	**140**	154	135	130	140	-0.24%
2	**580**	703	674	616	664	14.54%
3	**3030**	2450	2690	2510	2550	-15.84%
4	**6200**	6580	6570	6410	6520	5.16%

Comments

Appendix C

Air Quality Sampling Data

VATC ASSOCIATES INC.
ANALYTICAL SERVICES

Entact
1360 N. Wood Dale Road, Suite A
Wood Dale IL 60191

Attn : Shane Banks

Lab Proj #: 97126178
Date : 12/11/1997

Cust Proj #: 89005.9701

Date Received : 12/10/1997
Date Completed: 12/11/1997

REPORT OF ANALYSIS

ATC Sample Number	Client Sample Description	ATC Sample Number	Client Sample Description
97-027930	AS-01	97-027931	AS-02
97-027932	AS-03		

Barbara E. Rudziecka
Certified By
Barbara E. Rudziecka

Attention : Shane Banks
Entact
1360 N. Wood Dale Road, Suite A
Wood Dale IL 60191

Date of Report 12/11/97
Project Number 97126178
Re: 89005.9701

Sample ID 97 0027930 Date Sampled 11/13/1997 Date Received 12/10/1997
Sample Desc AS-01
Inorganic

METALS	Result	Unit	Method	PQL	Run Date	Anl
Lead	2.8	ug/m3	NSH 7300	2.0	12/11/97	kpa

Sample ID 97 0027931 Date Sampled 11/13/1997 Date Received 12/10/1997
Sample Desc AS-02
Inorganic

METALS	Result	Unit	Method	PQL	Run Date	Anl
Lead	16	ug/m3	NSH 7300	2.0	12/11/97	kpa

Sample ID 97 0027932 Date Sampled 11/13/1997 Date Received 12/10/1997
Sample Desc AS-03
Inorganic

METALS	Result	Unit	Method	PQL	Run Date	Anl
Lead	<2.0	ug/m3	NSH 7300	2.0	12/11/97	kpa

CHAIN OF CUSTODY 9112178 9?

ENTACT

1360 N. Wood Dale Rd. Suite A
Wood Dale, Illinois 60191
Ph. 630/616-2100 Fax 630/616-9203

Sampler: Hutchins Job #: CH76

ENTACT Contact: S. Banks Date: 12/9/97

Turnaround Time Requested

24 Hour | 48 Hour | 3 Day | Normal ✓ | Other |

Sample No.	Matrix	Composite or Grab	Description/Remarks	Preservative	Analysis
AS-01	air	—	ambient air sampling 9712279 30	—	A
AS-02	air	—	31	—	A
AS-03	air	—	32	—	A

Samples Relinquished By: Chee D. B 12/9/97 Date

Samples Received By: [illegible] 12/10/97 12:30 Date

Samples Relinquished By: _____ Date

Samples Received By: _____ Date

Samples Relinquished By: _____ Date

ANALYSIS

A= Total Pb F= _____

B= _____ G= _____

C= _____ H= _____

D= _____ I= _____

E= _____ J= _____

Distribution:

Original - To Customer w/ Final Report
2nd Copy - To Job File
3rd Copy - To Lab

Condition of Sample Upon Receipt:

Bottles Intact? Yes / No	Volatiles Free of Headspace? Yes / No	COC Seals Present and Intact? Yes / No

AIR MONITORING LOG

ENTACT
1360 N. Wood Dale Rd. Suite A
Wood Dale, Illinois 60191
Ph. 630/616-2100 Fax 630/616-9203

Sampler: Hutchins Job #: C176

ENTACT Contact: S. Banks Date: 11/13/97

Sample No.	Instrument I.D.	Time (min)	Flow Rate (cm³/min)	Volume (m3)	Type of Sample	Analysis
AS-01	C-01	304	2053	0.628	37mm MCE cassette	Total Pb
AS-02	5167	320	2169	0.694	37mm MCE cassette	Total Pb
AS-03	5170	320	2266	0.725	37mm MCE cassette	Total Pb

NOTES AND CALCULATIONS

Distribution:

Original - To Customer w/ Final Report
2nd Copy - To Job File
3rd Copy - To Lab

ATC ASSOCIATES INC.
ANALYTICAL SERVICES

Entact
1360 N. Wood Dale Road, Suite A
Wood Dale IL 60191

Attn : Shane Banks

Lab Proj #: 97126177
Date : 12/11/1997

Cust Proj #: 89005.9701 C-0176

Date Received : 12/10/1997
Date Completed: 12/11/1997

REPORT OF ANALYSIS

ATC Sample Number	Client Sample Description	ATC Sample Number	Client Sample Description
97-027926	AS-04	97-027927	AS-05
97-027928	AS-06	97-027929	AS-07

Barbara Rudziecka
Certified By
Barbara E. Rudziecka

tention : Shane Banks
Entact
1360 N. Wood Dale Road, Suite A
Wood Dale IL 60191

Date of Report 12/11/97
Project Number 97126177
Re: 89005.9701 C-0176

Sample ID 97 0027926 Date Sampled 11/14/1997 Date Received 12/10/1997
Sample Desc AS-04
Inorganic

METALS	Result	Unit	Method	PQL	Run Date	Anl
Lead	<2.0	ug/m3	NSH 7300	2.0	12/11/97	kpa

Sample ID 97 0027927 Date Sampled 11/14/1997 Date Received 12/10/1997
Sample Desc AS-05
Inorganic

METALS	Result	Unit	Method	PQL	Run Date	Anl
Lead	<2.0	ug/m3	NSH 7300	2.0	12/11/97	kpa

Sample ID 97 0027928 Date Sampled 11/14/1997 Date Received 12/10/1997
Sample Desc AS-06
Inorganic

METALS	Result	Unit	Method	PQL	Run Date	Anl
Lead	<2.0	ug/m3	NSH 7300	2.0	12/11/97	kpa

Sample ID 97 0027929 Date Sampled 11/14/1997 Date Received 12/10/1997
Sample Desc AS-07
Inorganic

METALS	Result	Unit	Method	PQL	Run Date	Anl
Lead	<2.0	ug/m3	NSH 7300	2.0	12/11/97	kpa

CHAIN OF USTODY

97126177

ENTACT

1360 N. Wood Dale Rd. Suite A
Wood Dale, Illinois 60191
Ph. 630/616-2100 Fax 630/616-9203

Sampler: Hutchins Job #: C176

ENTACT Contact: S. Banks Date: 12/9/97

Turnaround Time Requested

24 Hour | 48 Hour | 3 Day | Normal ✓ | Other | _____

Sample No.	Matrix	Composite or Grab	Description/Remarks	Preservative	Analysis
AS-04	air	-	ambient air sampling 9700027926	none	A
AS-05	air	-	27	-	A
AS-06	air	-	28	-	A
AS-07	air	-	29	-	A

Samples Relinquished By: [signature] 12/9/97 Date

Samples Received By: [signature] 12-10-97 12:30 Date

Samples Relinquished By: _____ Date

Samples Received By: _____ Date

Samples Relinquished By: _____ Date

ANALYSIS

A= Total Pb
B= _____
C= _____
D= _____
E= _____
F= _____
G= _____
H= _____
I= _____
J= _____

Distribution:

Original - To Customer w/ Final Report
2nd Copy - To Job File
3rd Copy - To Lab

Condition of Sample Upon Receipt:

Bottles Intact? Yes / No	Volatiles Free of Headspace? Yes / No	COC Seals Present and Intact? Yes / No

AIR MONITORING LOG

ENTACT
1360 N. Wood Dale Rd. Suite A
Wood Dale, Illinois 60191
Ph 630/616-2100 Fax 630/616-9203

Sampler: Hutchins Job #: C176

ENTACT Contact: S. Banks Date: 11/14/97

Sample No.	Instrument I.D.	Time (min)	Flow Rate (cm³/min)	Volume (m³)	Type of Sample	Analysis
AS-04	5167	554	2221	1.23	37mm MCE cassette	Total P6
AS-05	C-01	246	2066	0.508	37mm MCE cassette	Total P6
AS-06	5170	554	2331	1.29	37mm MCE cassette	Total P6
AS-07	5168	543	1874	1.01	37mm MCE cassette	Total P6

NOTES AND CALCULATIONS

Distribution:

Original - To Customer w/ Final Report
2nd Copy - To Job File
3rd Copy - To Lab

VATC ASSOCIATES INC.
ANALYTICAL SERVICES

Entact
1360 N. Wood Dale Road, Suite A
Wood Dale IL 60191

Attn : Shane Banks

Cust Proj #: 89005.9701

Lab Proj #: 97126179
Date : 12/11/1997

Date Received : 12/10/1997
Date Completed: 12/11/1997

REPORT OF ANALYSIS

ATC Sample Number	Client Sample Description	ATC Sample Number	Client Sample Description
97-027933	AS-08	97-027934	AS-09

This report shall not be reproduced except in full, without approval of the Laboratory.

Certified By
Barbara E. Rudziecka

Attention : Shane Banks
Entact
1360 N. Wood Dale Road, Suite A
Wood Dale IL 60191

Date of Report 12/11/97
Project Number 97126179
Re: 89005.9701

Sample ID 97 0027933 Date Sampled 11/17/1997 Date Received 12/10/1997
Sample Desc AS-08
Inorganic

METALS	Result	Unit	Method	PQL	Run Date	Anl
Lead	<2.0	ug/m3	NSH 7300	2.0	12/11/97	kpa

Sample ID 97 0027934 Date Sampled 11/17/1997 Date Received 12/10/1997
Sample Desc AS-09
Inorganic

METALS	Result	Unit	Method	PQL	Run Date	Anl
Lead	<2.0	ug/m3	NSH 7300	2.0	12/11/97	kpa

CHAIN OF CUSTODY 12/26/97

ENTACT

1360 N. Wood Dale Rd. Suite A
Wood Dale, Illinois 60191
Ph. 630/616-2100 Fax 630/616-9203

Sampler: Hutchins Job #: C176

ENTACT Contact: S. Banks Date: 12/9/97

Turnaround Time Requested
24 Hour[ ] 48 Hour[ ] 3 Day[ ] Normal[✓] Other[ ] _____

Sample No.	Matrix	Composite or Grab	Description/Remarks	Preservative	Analysis
AS-08	air	-	ambient air monitoring 9700027935	-	A
AS-09	air	-		-	A

Samples Relinquished By: Shelia D. Banks 12/9/97 Date

Samples Received By: [illegible] 12/10/97 12:30p Date

Samples Relinquished By: _____ Date

Samples Received By: _____ Date

Samples Relinquished By: _____ Date

ANALYSIS

A= Total Pb F= _____

B= Total Pb G= _____

C= _____ H= _____

D= _____ I= _____

E= _____ J= _____

Condition of Sample Upon Receipt:

Bottles Intact? Yes / No	Volatiles Free of Headspace? Yes / No	COC Seals Present and Intact? Yes / No

Distribution:
Original - To Customer w/ Final Report
2nd Copy - To Job File
3rd Copy - To Lab

AIR MONITORING LOG

ENTACT
1360 N. Wood Dale Rd. Suite A
Wood Dale, Illinois 60191
Ph 630/616-2100 Fax 630/616-9203

Sampler: Hutchins Job #: C176

ENTACT Contact: S. Banks Date: 11/18/97

Sample No.	Instrument I.D.	Time (min)	Flow Rate (cm³/min)	Volume (m³)	Type of Sample	Analysis
AS-08	5167	383	2197	0.841	37mm MCE cassette	Pb
AS-09	5170	386	2359	0.910	37mm MCE cassette	Pb

NOTES AND CALCULATIONS

Distribution:

Original - To Customer w/ Final Report
2nd Copy - To Job File
3rd Copy - To Lab

ATC ASSOCIATES INC.
ANALYTICAL SERVICES

Entact
1360 N. Wood Dale Road, Suite A
Wood Dale IL 60191

Attn : Shane Banks

Lab Proj #: 97126180
Date : 12/11/1997

Cust Proj #: 89005.9701

Date Received : 12/10/1997
Date Completed: 12/11/1997

REPORT OF ANALYSIS

ATC Sample Number	Client Sample Description	ATC Sample Number	Client Sample Description
97-027935	AS-10	97-027936	AS-11
97-027937	AS-12		

This report shall not be reproduced except in full, without approval of the Laboratory.

Certified By
Barbara E. Rudziecka

Attention : Shane Banks
Entact
1360 N. Wood Dale Road, Suite A
Wood Dale IL 60191

Date of Report 12/11/97
Project Number 97126180
Re: 89005.9701

Sample ID 97 0027935 Date Sampled 11/19/1997 Date Received 12/10/1997
Sample Desc AS-10
Inorganic

METALS	Result	Unit	Method	PQL	Run Date	Anl
Lead	<2.0	ug/m3	NSH 7300	2.0	12/11/97	kpa

Sample ID 97 0027936 Date Sampled 11/19/1997 Date Received 12/10/1997
Sample Desc AS-11
Inorganic

METALS	Result	Unit	Method	PQL	Run Date	Anl
Lead	<2.0	ug/m3	NSH 7300	2.0	12/11/97	kpa

Sample ID 97 0027937 Date Sampled 11/19/1997 Date Received 12/10/1997
Sample Desc AS-12
Inorganic

METALS	Result	Unit	Method	PQL	Run Date	Anl
Lead	<1.0	ug/filte	NSH 7300	1.0	12/11/97	kpa

CHAIN OF CUSTODY 9712615C

ENTACT
1360 N. Wood Dale Rd. Suite A
Wood Dale, Illinois 60191
Ph. 630/616-2100 Fax 630/616-9203

Sampler: Hutchins Job #: CH6

ENTACT Contact: S. Banks Date: 12/9/97

Turnaround Time Requested
24 Hour[ ] 48 Hour[ ] 3 Day[ ] Normal[✓] Other[ ] _____

Sample No.	Matrix	Composite or Grab	Description/Remarks	Preservative	Analysis
AS-10	air	-	ambient air sampling 9712615S	-	A
AS-11	air	-	3C	-	A
AS-12	air	-	3J	-	A

Samples Relinquished By: Shae D. [illegible] 12/9/97 Date

Samples Received By: [illegible] 12:45 12.9.97 Date

Samples Relinquished By: _____ Date

Samples Received By: _____ Date

Samples Relinquished By: _____ Date

ANALYSIS

A= Total Pb F= _____

B= _____ G= _____

C= _____ H= _____

D= _____ I= _____

E= _____ J= _____

Distribution:
Original - To Customer w/ Final Report
2nd Copy - To Job File
3rd Copy - To Lab

Condition of Sample Upon Receipt:

Bottles Intact? Yes / No	Volatiles Free of Headspace? Yes / No	COC Seals Present and Intact? Yes / No

AIR MONITORING LOG

ENTACT
1360 N. Wood Dale Rd. Suite A
Wood Dale, Illinois 60191
Ph 630/616-2100 Fax 630/616-9203

Sampler: Hutchins Job #: C176

ENTACT Contact: S. Banks Date: 4/19/07

Sample No.	Instrument I.D.	Time (min)	Flow Rate (cm³/min)	Volume (m³)	Type of Sample	Analysis
AS-10	5170	352	2341	0.824	37mm MCE cassette	Total Pb
AS-11	5167	352	2217	0.780	37mm MCE cassette	Total Pb
AS-12	–	–	–	–	37mm MCE cassette	Total Pb

NOTES AND CALCULATIONS

Distribution:

Original - To Customer w/ Final Report
2nd Copy - To Job File
3rd Copy - To Lab

VATC ASSOCIATES INC.
ANALYTICAL SERVICES

Entact
1360 N. Wood Dale Road, Suite A
Wood Dale IL 60191

Attn : Shane Banks

Lab Proj #: 97126181
Date : 12/11/1997

Cust Proj #: 89005.9701

Date Received : 12/10/1997
Date Completed: 12/11/1997

REPORT OF ANALYSIS

ATC Sample Number	Client Sample Description	ATC Sample Number	Client Sample Description
97-027938	AS-13	97-027939	AS-14
97-027940	AS-15		

Barbara E. Rudziecka

Certified By
Barbara E. Rudziecka

Attention : Shane Banks
Entact
1360 N. Wood Dale Road, Suite A
Wood Dale IL 60191

Date of Report 12/11/97
Project Number 97126181
Re: 89005.9701

Sample ID 97 0027938 Date Sampled 11/20/1997 Date Received 12/10/1997
Sample Desc AS-13
Inorganic

METALS	Result	Unit	Method	PQL	Run Date	Anl
Lead	<2.0	ug/m3	NSH 7300	2.0	12/11/97	kpa

Sample ID 97 0027939 Date Sampled 11/20/1997 Date Received 12/10/1997
Sample Desc AS-14
Inorganic

METALS	Result	Unit	Method	PQL	Run Date	Anl
Lead	<2.0	ug/m3	NSH 7300	2.0	12/11/97	kpa

Sample ID 97 0027940 Date Sampled 11/20/1997 Date Received 12/10/1997
Sample Desc AS-15
Inorganic

METALS	Result	Unit	Method	PQL	Run Date	Anl
Lead	<2.0	ug/m3	NSH 7300	2.0	12/11/97	kpa

CHAIN OF CUSTODY 97126181

ENTACT

1360 N. Wood Dale Rd. Suite A
Wood Dale, Illinois 60191
Ph. 630/616-2100 Fax 630/616-9203

Sampler: Hutchins Job #: C176

ENTACT Contact: S. Banks Date: 12/9/97

Turnaround Time Requested

24 Hour [ ] 48 Hour [ ] 3 Day [ ] Normal [✓] Other [ ] _____

Sample No.	Matrix	Composite or Grab	Description/Remarks	Preservative	Analysis
AS-13	air	-	ambient air sampling 97027738	-	A
AS-14	air	-	39	-	A
AS-15	air	-	40	-	A

Samples Relinquished By: Chas D. Banks 12/9/97 Date

Samples Received By [signature] 12/10/97 12:34p Date

Samples Relinquished By: _____ Date

Samples Received By: _____ Date

Samples Relinquished By: _____ Date

ANALYSIS

A= Total Pb F= _____

B= _____ G= _____

C= _____ H= _____

D= _____ I= _____

E= _____ J= _____

Condition of Sample Upon Receipt:

Bottles Intact? Yes / No	Volatiles Free of Headspace? Yes / No	COC Seals Present and Intact? Yes / No

Distribution:

Original - To Customer w/ Final Report
2nd Copy - To Job File
3rd Copy - To Lab

AIR MONITORING LOG

ENTACT
1360 N Wood Dale Rd. Suite A
Wood Dale, Illinois 60191
Ph 630/616-2100 Fax 630/616-9203

Sampler: Hutchins Job #: C176

ENTACT Contact: S. Banks Date: 11/20/07

Sample No.	Instrument I.D.	Time (min)	Flow Rate (cm³/min)	Volume (cm³)	Type of Sample	Analysis
AS-13	5168	480	1579	0.631	37mm MCE cassette	Total Pb
AS-14	5170	480	2402	0.960	37mm MCE cassette	Total Pb
AS-15	5167	480	2200	0.880	37mm MCE cassette	Total Pb

NOTES AND CALCULATIONS

Distribution:

Original - To Customer w/ Final Report
2nd Copy - To Job File
3rd Copy - To Lab

Appendix D

Untreated Soil Characterization

Ross Analytical Services, Inc.
16433 Foltz Industrial Parkway • Strongsville, Ohio 44136
(216) 572-3200 • Fax (216) 572-7620 • 1-800-325-7737

CERTIFICATE OF ANALYSIS

Client:

ENTACT
2850 W. 3rd Street
Cleveland, OH 44113

Attn: Shane Banks

Work Order #: 97-11-126
Client Code: ENTACT
Report Date: 11/20/97
Work ID: Soils for TCLP & Total Lead
Date Received: 11/19/97

Purchase Order: C176

SAMPLE IDENTIFICATION

Lab Number	Sample Description	Lab Number	Sample Description
01	US-01	02	US-02
03	US-03	04	US-04
05	US-05	06	US-06
07	US-07	08	US-08

Enclosed are the analytical results for the samples listed above. Analyses were performed by the methods referenced in the Test Methodologies section, while any special circumstances are described in the Report Comments section. Unless otherwise noted, sample results are not moisture-corrected. Most analytes are reported relative to an Estimated Quantitation Limit (EQL), which is the lowest concentration that can be reliably measured under routine laboratory conditions. Questions or comments concerning the enclosed results should be directed to your Client Services Representative.

Certificate approved by
Carol L. Turner

TEST METHODOLOGIES

The bottle leaching step of TCLP (for metals and semivolatile organics) was performed by EPA Method 1311. Matrix spikes, if any, were added at the time of digestion or extraction for further analyses.

Metals were determined in aqueous samples and leachates by digestion with nitric and hydrochloric acids as in EPA Method 3010A, followed by Inductively Coupled Plasma Emission Spectroscopy as in EPA Method 6010A unless noted otherwise.

Metals were determined in solid and non-aqueous liquid samples by digestion with nitric acid, hydrogen peroxide, and hydrochloric acid as in EPA Method 3050A, followed by Inductively Coupled Plasma Emission Spectroscopy as in EPA Method 6010A, unless noted otherwise.

Sample Description: US-01 **Lab No.:** 01

Analyte Description	Result	Units	EQL
TCLP fluid leaching	11/20/97	Date begun	
Lead by ICP	2,030	mg/Kg	4.8
TCLP Lead by ICP	19.9	mg/L	0.25

Sample Description: US-02 **Lab No.:** 02

Analyte Description	Result	Units	EQL
TCLP fluid leaching	11/20/97	Date begun	
Lead by ICP	1,850	mg/Kg	5.0
TCLP Lead by ICP	5.56	mg/L	0.25

Sample Description: US-03 **Lab No.:** 03

Analyte Description	Result	Units	EQL
TCLP fluid leaching	11/20/97	Date begun	
Lead by ICP	1,460	mg/Kg	4.9
TCLP Lead by ICP	9.63	mg/L	0.25

Sample Description: US-04 **Lab No.:** 04

Analyte Description	Result	Units	EQL
TCLP fluid leaching	11/20/97	Date begun	
Lead by ICP	2,880	mg/Kg	4.8
TCLP Lead by ICP	8.94	mg/L	0.25

Sample Description: US-05 **Lab No.:** 05

Analyte Description	Result	Units	EQL
TCLP fluid leaching	11/20/97	Date begun	
Lead by ICP	3,190	mg/Kg	4.9
TCLP Lead by ICP	16.2	mg/L	0.25

Sample Description: US-06 **Lab No.:** 06

Analyte Description	Result	Units	EQL
TCLP fluid leaching	11/20/97	Date begun	
Lead by ICP	4,310	mg/Kg	4.8

Analyte Description	Result	Units	EQL
TCLP Lead by ICP	56.0	mg/L	0.25

Sample Description: US-07 **Lab No.:** 07

Analyte Description	Result	Units	EQL
TCLP fluid leaching	11/20/97	Date begun	
Lead by ICP	1,720	mg/Kg	4.9
TCLP Lead by ICP	5.93	mg/L	0.25

Sample Description: US-08 **Lab No.:** 08

Analyte Description	Result	Units	EQL
TCLP fluid leaching	11/20/97	Date begun	
Lead by ICP	1,040	mg/Kg	5.0
TCLP Lead by ICP	4.21	mg/L	0.25

QC SUMMARY

Laboratory Control Samples

Target	LCSS5657 % Recovery	LCSW5658 % Recovery
Lead	100	97

* LCSS5657 was analyzed with the batch for lead on a total basis
* LCSW5658 was analyzed with the batch for lead on a TCLP basis

Laboratory Method Blank, PBS5450

Target	Result (mg/Kg)	EQL (mg/Kg)
Lead	<EQL	5.0

Laboratory Method Blank, PBW5451

Target	Result (mg/L)	EQL (mg/L)
Lead	<EQL	0.25

* PBS5450 was analyzed with the batch for lead on a total basis
* PBS5451 was analyzed with the batch for lead on a TCLP basis

Matrix Spike/Matrix Spike Duplicate Pair
Performed on the TCLP leachate of Soil US-01 (Lab No. 01)

Target	MS % Recovery	MSD % Recovery	RPD
Lead	100	98	2

CHAIN OF CUSTODY

97-11-126

ENTACT

1360 N. Wood Dale Rd. Suite A
Wood Dale, Illinois 60191
Ph. 630/616-2100 Fax 630/616-9203

Sampler: Bailey Job #: C171

ENTACT Contact: C. Bailey Date: 11/19/97

+ report by 11/21 Turnaround Time Requested
24 Hour ☐ 48 Hour ☒ 3 Day ☐ Normal ☐ Other ☐

Sample No.	Matrix	Composite or Grab	Description/Remarks	Preservative	Analysis
HC C1	soil	grab	unvented excavated soil	none	A B
HC C2	soil	grab		none	A B
HC C3	soil	grab		none	A B
HC C4	soil	grab		none	A B
HC C5	soil	grab		none	A B
HC C6	soil	grab		none	A B
HC C7	soil	grab		none	A B
HC C8	soil	grab		none	A B

Samples Relinquished By: Shaun Bailey 11/19/97 Date

Samples Received By: [illegible] 11/19/97 5:32pm Date

Samples Relinquished By: _____ Date

Samples Received By: _____ 11/20/97 Date

Samples Relinquished By: _____ Date

ANALYSIS

A= total P6 F= _____

B= TCLP P6 G= _____

C= _____ H= _____

D= _____ I= _____

E= _____ J= _____

Condition of Sample Upon Receipt:

Bottles Intact? Yes / No | Volatiles Free of Headspace? Yes / No | COC Seals Present and Intact? Yes / No

Distribution:

Original - To Customer w/ Final Report
2nd Copy - To Job File
3rd Copy - To Lab

ROSS ANALYTICAL SERVICES, INC.

SAMPLE RECEIPT REPORT

WORKORDER # 97-11-126, 127

RECEIVED BY: [signature] DATE/TIME: 11/19/97 1735 LOGIN DATE: 11/20/97

SAMPLES ARRIVED BY(Circle One) Fed-Ex UPS (Other)(specify) client

SHIPPING DOCUMENTATION PRESENT? YES/NO
TRACKING NUMBER _____

SHIPPING CONTAINER INTACT? (YES)/NO (If no, explain below)

CUSTODY SEALS PRESENT? (YES)/NO
CUSTODY SEALS INTACT? (YES)/NO
Where? Cooler/(Bottles)
Seal Nos. _____

SAMPLE TEMPERATURE 5°C

AQUEOUS SAMPLES FOR METALS, pH < 2? YES/NO/(NA)

AQUEOUS SAMPLES FOR WET TESTS, pH < 2? YES/NO/(NA)

AQUEOUS SAMPLES FOR CYANIDE, pH > 12? YES/NO/(NA)

AQUEOUS SAMPLES FOR VOA'S PRESERVED WITH HCl? YES/NO/(NA) (From COC. Do not take pH)

OTHER PRESERVATION REQUIREMENTS MET? YES/NO/(NA) SPECIFY:

SAMPLES INTACT? (YES)/NO/NA (If no, explain below)

SHIPPING CONTAINER: (Circle) Ross Client
Date Returned N/A

COMMENTS:

Appendix E

Treated Soil Verification

ROSS Ross Analytical Services, Inc.
16433 Foltz Industrial Parkway • Strongsville, Ohio 44136
(216) 572-3200 • Fax (216) 572-7620 • 1-800-325-7737

CERTIFICATE OF ANALYSIS

Client:

ENTACT
1630 Wood Dale Road
Wood Dale, IL 60191

Attn: Shane Banks

Work Order #: 97-12-021
Client Code: ENTACT
Report Date: 12/11/97
Work ID: Soils for TCLP Lead
Date Received: 12/04/97

Purchase Order: C176

SAMPLE IDENTIFICATION

Lab Number	Sample Description	Lab Number	Sample Description
01	TS-01	02	TS-02
03	TS-03	04	TS-04
05	TS-05	06	TS-06
07	TS-07	08	TS-08

Enclosed are the analytical results for the samples listed above. Analyses were performed by the methods referenced in the Test Methodologies section, while any special circumstances are described in the Report Comments section. Unless otherwise noted, sample results are not moisture-corrected. Most analytes are reported relative to an Estimated Quantitation Limit (EQL), which is the lowest concentration that can be reliably measured under routine laboratory conditions. Questions or comments concerning the enclosed results should be directed to your Client Services Representative.

Certificate approved by
Carol L. Turner

TEST METHODOLOGIES

The bottle leaching step of TCLP (for metals and semivolatile organics) was performed by EPA Method 1311. Matrix spikes, if any, were added at the time of digestion or extraction for further analyses.

Metals were determined in aqueous samples and leachates by digestion with nitric and hydrochloric acids as in EPA Method 3010A, followed by Inductively Coupled Plasma Emission Spectroscopy as in EPA Method 6010A unless noted otherwise.

Sample Description: TS-01 **Lab No.:** 01

Analyte Description	Result	Units	EQL
TCLP fluid leaching	12/08/97	Date begun	
TCLP Lead by ICP	<EQL	mg/L	0.25

Sample Description: TS-02 **Lab No.:** 02

Analyte Description	Result	Units	EQL
TCLP fluid leaching	12/08/97	Date begun	
TCLP Lead by ICP	<EQL	mg/L	0.25

Sample Description: TS-03 **Lab No.:** 03

Analyte Description	Result	Units	EQL
TCLP fluid leaching	12/08/97	Date begun	
TCLP Lead by ICP	0.72	mg/L	0.25

Sample Description: TS-04 **Lab No.:** 04

Analyte Description	Result	Units	EQL
TCLP fluid leaching	12/08/97	Date begun	
TCLP Lead by ICP	<EQL	mg/L	0.25

Sample Description: TS-05 **Lab No.:** 05

Analyte Description	Result	Units	EQL
TCLP fluid leaching	12/08/97	Date begun	
TCLP Lead by ICP	<EQL	mg/L	0.25

Sample Description: TS-06 **Lab No.:** 06

Analyte Description	Result	Units	EQL
TCLP fluid leaching	12/08/97	Date begun	
TCLP Lead by ICP	<EQL	mg/L	0.25

Sample Description: TS-07 **Lab No.:** 07

Analyte Description	Result	Units	EQL
TCLP fluid leaching	12/08/97	Date begun	
TCLP Lead by ICP	<EQL	mg/L	0.25

Sample Description: TS-08 **Lab No.:** 08

Analyte Description	Result	Units	EQL
TCLP fluid leaching	12/08/97	Date begun	
TCLP Lead by ICP	<EQL	mg/L	0.25

QC SUMMARY

Laboratory Control Sample, LCSW5706

Target	% Recovery
Lead	98

Laboratory Method Blank, PBW5498

Target	Result (mg/L)	EQL (mg/L)
Lead	<EQL	0.25

TCLP BOTTLE Blank, BBLK0199

Target	Result (mg/L)	EQL (mg/L)
Lead	<EQL	0.25

Matrix Spike/Matrix Spike Duplicate Pair
Performed on the TCLP leachate of Soil TS01 (Lab No. 01)

Target	MS % Recovery	MSD % Recovery	RPD
Lead	92	94	2

97-12-021

Ross Analytical Services, Inc.
16433 Foltz Industrial Parkway • Strongsville, Ohio 44136
(216) 572-3200 • Fax (216) 572-7620 • 1-800-325-7737

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD

Page 1 of 1

Report to: INTACT Associates
Attn: Steve Bahl
117 N. Wood Dale Rd. Suite A
Wood Dale, IL 60191
Telephone: (630) 616-2100
(630) 616-9203 [fax]

Lab Contact: J. Sondermann
Purchase Order No.: C176
Project Reference: -

Bill to: Same address

ONE CONTAINER PER LINE

Sample Number	Sample Type/Description	Date Collected	Container Type	Pre-servative	Required Tests	Condition on Receipt (Lab)
TS-01	Soil	12/4	8oz gl	-	TCLP Pb	
TS-02	Soil	12/4	8oz gl	-	TCLP Pb	Intact
TS-03	Soil	12/4	8oz gl	-	TCLP Pb	
TS-04	Soil	12/4	8oz gl	-	TCLP Pb	
TS-05	Soil	12/4	8oz gl	-	TCLP Pb	
TS-06	Soil	12/4	8oz gl	-	TCLP Pb	
TS-07	Soil	12/4	8oz gl	-	TCLP Pb	
TS-08	Soil	12/4	8oz gl	-	TCLP Pb	

Possible Hazard Identification:
Non-hazard Flammable Skin Irritant Inhalation Other

Sample Disposal:
Return to Client (Disposal by Lab) Archive (mos)

Turnaround Time Required:
Normal Rush Report Required By

QA Requirements:

1. Relinquished by Signature/Affiliation: Steve Bahl Date: 12/4/97
2. Relinquished by Signature/Affiliation: Date:

1. Received by Signature/Affiliation: Date: 12/4/97
2. Received by Signature/Affiliation: Date: 12/4/97

Special Instructional Comments:

ROSS ANALYTICAL SERVICES, INC.

SAMPLE RECEIPT REPORT

WORKORDER # 9712-021

RECEIVED BY: [signature] DATE/TIME: 12/4/97 1130 LOGIN DATE: 12/4/97

SAMPLES ARRIVED BY(Circle One) Fed–Ex UPS (Other)(specify) Client

SHIPPING DOCUMENTATION PRESENT? YES/NO
TRACKING NUMBER _____

SHIPPING CONTAINER INTACT? (YES)/NO (If no, explain below)

CUSTODY SEALS PRESENT? (YES)/NO
CUSTODY SEALS INTACT? (YES)/NO
Where? Cooler/(Bottles)
Seal Nos. _____

SAMPLE TEMPERATURE 4°

AQUEOUS SAMPLES FOR METALS, pH < 2? YES/NO/(NA)

AQUEOUS SAMPLES FOR WET TESTS, pH < 2? YES/NO/(NA)

AQUEOUS SAMPLES FOR CYANIDE, pH > 12? YES/NO/(NA)

AQUEOUS SAMPLES FOR VOA'S PRESERVED WITH HCl? YES/NO/(NA) (From COC. Do not take pH)

OTHER PRESERVATION REQUIREMENTS MET? YES/NO/(NA) SPECIFY:

SAMPLES INTACT? (YES)/NO/NA (If no, explain below)

SHIPPING CONTAINER: (Circle) (Ross) Client
Date Returned

COMMENTS:

Appendix F

Backfill Laboratory Analytical

Ross Analytical Services, Inc.
16433 Foltz Industrial Parkway • Strongsville, Ohio 44136
(216) 572-3200 • Fax (216) 572-7620 • 1-800-325-7737

CERTIFICATE OF ANALYSIS

Client:

ENTACT
2850 W. 3rd Street
Cleveland, OH 44113

Attn: Shane Banks

Work Order #: 97-11-108
Client Code: ENTACT
Report Date: 11/20/97
Work ID: Sand: Waste Characterization
Date Received: 11/18/97

Purchase Order: C176

SAMPLE IDENTIFICATION

Lab Number	Sample Description	Lab Number	Sample Description
01	BF-003	02	BF-004

Enclosed are the analytical results for the samples listed above. Analyses were performed by the methods referenced in the Test Methodologies section, while any special circumstances are described in the Report Comments section. Unless otherwise noted, sample results are not moisture-corrected. Most analytes are reported relative to an Estimated Quantitation Limit (EQL), which is the lowest concentration that can be reliably measured under routine laboratory conditions. Questions or comments concerning the enclosed results should be directed to your Client Services Representative.

Certificate approved by
Carol L. Turner

TEST METHODOLOGIES

pH in solids and non-aqueous liquids was determined electrometrically following slurrying with water as in EPA Method 9045C.

Organochlorine pesticides and PCB's were determined using gas chromatography with electron capture detection as in EPA Method 8081.

Metals were determined in solid and non-aqueous liquid samples by digestion with nitric acid, hydrogen peroxide, and hydrochloric acid as in EPA Method 3050A, followed by Inductively Coupled Plasma Emission Spectroscopy as in EPA Method 6010A, unless noted otherwise.

Mercury was determined in solid and non-aqueous liquid samples by cold vapor atomic absorption after acid/permanganate digestion as in EPA Methods 245.5 and 7471A. A single analysis was performed unless otherwise noted.

Total petroleum hydrocarbons were determined by infrared spectroscopy following extraction with Freon-113 as in EPA Method 418.1. Solids were Soxhlet extracted as in EPA Method 9071.

Solid and semisolid samples extracted for organochlorine pesticides and PCB's in an ultrasonic extractor using methylene chloride and acetone as in EPA Method 3550A.

Work Order # 97-11-108 Ross Analytical Services, Inc Reported: 11/20/97

Sample Description: BF-003 **Lab No.:** 01

Analyte Description	Result	Units	EQL
pH by EPA 9045C	7.77	Standard units	
Arsenic by ICP	10.0	mg/Kg	10
Barium by ICP	20.1	mg/Kg	0.38
Cadmium by ICP	<EQL	mg/Kg	0.48
Chromium by ICP	4.40	mg/Kg	1.0
Lead by ICP	11.9	mg/Kg	4.8
Selenium by ICP	<EQL	mg/Kg	10
Silver by ICP	<EQL	mg/Kg	1.0
Mercury by CVAA	<EQL	mg/Kg	0.08

Sample Description: BF-004 **Lab No.:** 02

Analyte Description	Result	Units	EQL
pH by EPA 9045C	7.21	Standard units	
Arsenic by ICP	<EQL	mg/Kg	10
Barium by ICP	56.6	mg/Kg	0.39
Cadmium by ICP	<EQL	mg/Kg	0.49
Chromium by ICP	11.4	mg/Kg	1.0
Lead by ICP	25.0	mg/Kg	4.9
Selenium by ICP	<EQL	mg/Kg	10
Silver by ICP	<EQL	mg/Kg	1.0
Mercury by CVAA	<EQL	mg/Kg	0.08

ANALYTICAL RESULTS

Client Sample ID.....: **SBF003**
Data Type.....: SAMPLE

Lab Sample ID.....: 971110801C
Lab File Name.....: 1971119a11.d
Concentration Level...: LOW
Method.....: L8080.m
Compound Sub-List.....: 8081

Date Extracted.....: 11/18/97
Date Analyzed.....: 11/19/97
Time Injected.....: 16:56
Dilution Factor....: 1
Percent Moisture...: 0 % Undecanted

Surrogate Analytes CAS Number	Analyte	% Recovery	Flags	Recovery Limits Lower - Upper	
877-09-8	Tetrachloro-m-xylene	100%		10 - 120	SURROGATE
2051-24-3	Decachlorobiphenyl	108%		10 - 140	SURROGATE

Target Analytes CAS Number	Analyte	Results (ug/Kg)	Flags	EQL
11104-28-2	Aroclor-1221	< EQL		66.0
319-84-6	alpha-BHC	< EQL		1.70
11141-16-5	Aroclor-1232	< EQL		33.0
12674-11-2	Aroclor-1016	< EQL		33.0
58-89-9	gamma-BHC (Lindane)	< EQL		1.70
319-85-7	beta-BHC	< EQL		1.70
76-44-8	Heptachlor	< EQL		1.70
53469-21-9	Aroclor-1242	< EQL		33.0
319-86-8	delta-BHC	< EQL		1.70
309-00-2	Aldrin	< EQL		1.70
12672-29-6	Aroclor-1248	< EQL		33.0
1024-57-3	Heptachlor epoxide	< EQL		1.70
5103-74-2	gamma-Chlordane	< EQL		1.70
5103-71-9	alpha-Chlordane	< EQL		1.70
959-98-8	Endosulfan I	< EQL		1.70
72-55-9	4,4'-DDE	**1.40**	J	3.30
60-57-1	Dieldrin	< EQL		3.30
11097-69-1	Aroclor-1254	< EQL		33.0
72-20-8	Endrin	< EQL		3.30
72-54-8	4,4'-DDD	**2.60**	J	3.30
33213-65-9	Endosulfan II	< EQL		3.30
50-29-3	4,4'-DDT	**2.00**	J	3.30
8001-35-2	Toxaphene	< EQL		66.0
7421-93-4	Endrin aldehyde	< EQL		3.30
1031-07-8	Endosulfan sulfate	< EQL		3.30
11096-82-5	Aroclor-1260	< EQL		33.0
72-43-5	Methoxychlor	< EQL		17.0
53494-70-5	Endrin ketone	< EQL		3.30

ANALYTICAL RESULTS

Client Sample ID.....: **SBF004**
Data Type.....: SAMPLE

Lab Sample ID.....: 971110802C
Lab File Name.....: 1971119a12.d
Concentration Level...: LOW
Method.....: L8080.m
Compound Sub-List.....: 8081

Date Extracted.....: 11/18/97
Date Analyzed.....: 11/19/97
Time Injected.....: 17:41
Dilution Factor....: 1
Percent Moisture...: 0 % Undecanted

Surrogate Analytes CAS Number	Analyte	% Recovery	Flags	Recovery Limits Lower - Upper	
877-09-8	Tetrachloro-m-xylene	92%		10 - 120	SURROGATE
2051-24-3	Decachlorobiphenyl	108%		10 - 140	SURROGATE

Target Analytes CAS Number	Analyte	Results (ug/Kg)	Flags	EQL
11104-28-2	Aroclor-1221	< EQL		66.0
319-84-6	alpha-BHC	< EQL		1.70
11141-16-5	Aroclor-1232	< EQL		33.0
12674-11-2	Aroclor-1016	< EQL		33.0
58-89-9	gamma-BHC (Lindane)	< EQL		1.70
319-85-7	beta-BHC	< EQL		1.70
76-44-8	Heptachlor	< EQL		1.70
53469-21-9	Aroclor-1242	< EQL		33.0
319-86-8	delta-BHC	< EQL		1.70
309-00-2	Aldrin	< EQL		1.70
12672-29-6	Aroclor-1248	< EQL		33.0
1024-57-3	Heptachlor epoxide	**<EQL**	J	1.70
5103-74-2	gamma-Chlordane	**2.40**		1.70
5103-71-9	alpha-Chlordane	**2.60**		1.70
959-98-8	Endosulfan I	< EQL		1.70
72-55-9	4,4'-DDE	**8.80**		3.30
60-57-1	Dieldrin	**1.30**	J	3.30
11097-69-1	Aroclor-1254	< EQL		33.0
72-20-8	Endrin	< EQL		3.30
72-54-8	4,4'-DDD	**6.90**		3.30
33213-65-9	Endosulfan II	< EQL		3.30
50-29-3	4,4'-DDT	**11.0**		3.30
8001-35-2	Toxaphene	< EQL		66.0
7421-93-4	Endrin aldehyde	< EQL		3.30
1031-07-8	Endosulfan sulfate	< EQL		3.30
11096-82-5	Aroclor-1260	< EQL		33.0
72-43-5	Methoxychlor	< EQL		17.0
53494-70-5	Endrin ketone	< EQL		3.30

****
QUALITY CONTROL
****

Work Order # 97-11-108 Ross Analytical Services, Inc Reported: 11/20/97

MERCURY QC SUMMARY

Laboratory Control Sample, LCSS5650

Target	% Recovery
Mercury	81

Laboratory Method Blank, PBS5443

Target	Result (mg/Kg)	EQL (mg/Kg)
Mercury	<EQL	0.08

Matrix Spike/Matrix Spike Duplicate Pair
Performed on Soil BF-003 (Lab No. 01)

Target	MS % Recovery	MSD % Recovery	RPD
Mercury	102	104	2

==========
ICP METALS BLANKS
==========

BLANK

Seq.	Sample ID	Test Code	Class/ Sub/Dup	Matrix/ Sub	Ref Seq	Spk Seq	Dilution	Weight	Volume	Conv. Factor	Flag	Ver
1	PBS5442	ICP_S	B P	S			1.0	1.01	1.0	1		BW

Analytes	Result	Detection Limit	Specs Low	Specs High	V
Aluminum	ND	10			Y
Antimony	ND	10			Y
Arsenic	ND	10			Y
Barium	ND	0.40			Y
Beryllium	ND	0.20			Y
Boron	ND	5.0			Y
Cadmium	ND	0.50			Y
Calcium	ND	20			Y
Chromium	ND	1.0			Y
Cobalt	ND	1.0			Y
Copper	ND	2.0			Y
Iron	ND	10			Y
Lead	ND	5.0			Y
Lithium	ND	2.0			Y
Magnesium	ND	10			Y
Manganese	ND	0.50			Y
Molybdenum	ND	1.0			Y
Nickel	ND	2.0			Y
Potassium	ND	20			Y
Selenium	ND	10			Y
Silicon	ND	50			Y
Strontium	ND	1.0			Y
Silver	ND	1.0			Y
Sodium	ND	20			Y
Thallium	ND	20			Y
Tin	ND	10			Y
Vanadium	ND	1.0			Y
Zinc	ND	2.0			Y
Titanium	ND	5.0			Y
Zirconium	ND	2.0			Y

Work Order # 97-11-108 Ross Analytical Services, Inc Reported: 11/21/97

ICP METALS LABORATORY CONTROL SAMPLES

SPIKE

Seq.	Sample ID	Test Code	Class/ Sub/Dup	Matrix/ Sub	Ref Spk Seq	Seq	Dilution	Weight	Volume	Conv. Factor	Flag	Ver
2	LCSS5649	ICP_S	K L	S		1	1.0	1.0	1.0	1		BW

Analytes	Result	Unspiked Result	Detection Limit	Spike Value	Rec-overy	Specs Low	Specs High					V
Aluminum	4126	ND	10	4280	96.4	53.04	153.0					Y
Antimony	127	ND	10	116	109	20.00	272.4					Y
Arsenic	94	ND	10	95	98.9	49.00	153.2					Y
Barium	90.51	ND	0.40	97.70	92.6	70.01	136.1					Y
Beryllium	93.01	ND	0.20	96.50	96.4	64.04	138.9					Y
Boron	90.4	ND	5.0	93.4	96.8	82.01	117.8					Y
Cadmium	99.97	ND	0.50	106.00	94.3	58.96	139.6					Y
Calcium	4398	ND	20	4490	98.0	67.93	136.1					Y
Chromium	80.4	ND	1.0	82.3	97.7	59.05	138.5					Y
Cobalt	90.1	ND	1.0	91.9	98.0	63.00	139.3					Y
Copper	100.9	ND	2.0	94.9	106	61.01	141.2					Y
Iron	6917	ND	10	6490	107	67.03	134.1					Y
Lead	88.5	ND	5.0	91.7	96.5	53.98	139.6					Y
Lithium	99.2	ND	2.0	97.3	102	85.61	114.1					Y
Magnesium	1752	ND	10	1810	96.8	62.98	140.9					Y
Manganese	138.16	ND	0.50	138.00	100	68.99	134.8					Y
Molybdenum	100.3	ND	1.0	93.1	108	61.01	140.7					Y
Nickel	100.3	ND	2.0	99.5	101	58.99	142.7					Y
Potassium	1690	ND	20	1680	101	63.10	132.7					Y
Selenium	102	ND	10	99	103	49.04	146.0					Y
Silicon	330	ND	50	143	231 *	89.51	110.5					Y
Strontium	103.3	ND	1.0	112.0	92.2	81.34	118.8					Y
Silver	94.5	ND	1.0	90.6	104	38.96	146.8					Y
Sodium	4079	ND	20	4080	100	51.96	146.1					Y
Thallium	93	ND	20	91	102	49.01	153.4					Y
Tin	91	ND	10	103	88.3	49.03	151.5					Y
Vanadium	85.2	ND	1.0	84.8	100	68.04	135.6					Y
Zinc	94.8	ND	2.0	98.6	96.1	57.00	152.1					Y
Titanium	171.6	ND	5.0	182.0	94.3	60.44	139.6					Y
Zirconium	90.6	ND	2.0	83.4	109	82.97	117.0					Y

ICP METALS MATRIX SPIKE/MATRIX SPIKE DUPLICATE PAIRS

Work Order: 9711108 Client: ENTACT

MATRIX SPIKE

Seq.	Sample ID	Test Code	Class/ Sub/Dup	Matrix/ Sub	Ref Spk Seq Seq	Dilution	Weight	Volume	Conv. Factor	Flag	Ver
4	108-01B-S	ICP_S	K M	S	3	1.0	1.03	1.0	1		BW

Analytes	Result	Unspiked Result	Detection Limit	Spike Value	Rec-overy	Specs Low	Specs High					V
Aluminum	7004	1890	10	4854	105	75	125					Y
Antimony	139	ND	10	194	71.6 *	75	125					Y
Arsenic	184	10	10	194	89.7	75	125					Y
Barium	204.13	20.14	0.39	194.17	94.8	75	125					Y
Beryllium	177.07	ND	0.19	194.17	91.2	75	125					Y
Boron	178.9	ND	4.9	194.2	92.1	75	125					Y
Cadmium	171.28	ND	0.49	194.17	88.2	75	125					Y
Calcium	18077	14896	19	4854	65.5 *	75	125					Y
Chromium	181.8	4.4	1.0	194.2	91.3	75	125					Y
Cobalt	180.2	3.2	1.0	194.2	91.1	75	125					Y
Copper	188.3	10.6	1.9	194.2	91.5	75	125					Y
Iron	15224	11798	10	3883	88.2	75	125					Y
Lead	189.0	11.9	4.9	194.2	91.2	75	125					Y
Lithium	192.1	3.7	1.9	194.2	97.0	75	125					Y
Magnesium	9355	5501	10	3883	99.3	75	125					Y
Manganese	492.59	330.13	0.49	194.17	83.7	75	125					Y
Molybdenum	178.9	1.0	1.0	194.2	91.6	75	125					Y
Nickel	182.2	9.5	1.9	194.2	88.9	75	125					Y
Potassium	3942	284	19	3883	94.2	75	125					Y
Selenium	184	ND	10	194	94.8	75	125					Y
Silicon	405	261	49	194	74.2 *	75	125					Y
Strontium	194.3	18.4	1.0	194.2	90.6	75	125					Y
Silver	181.6	ND	1.0	194.2	93.5	75	125					Y
Sodium	4662	37	19	4854	95.3	75	125					Y
Thallium	181	ND	19	194	93.3	75	125					Y
Tin	168	ND	10	194	86.6	75	125					Y
Vanadium	185.4	4.5	1.0	194.2	93.2	75	125					Y
Zinc	216.9	43.9	1.9	194.2	89.1	75	125					Y
Titanium	232.6	49.0	4.9	194.2	94.5	75	125					Y
Zirconium	187.6	5.4	1.9	194.2	93.8	75	125					Y

MATRIX SPIKE DUPLICATE

Seq.	Sample ID	Test Code	Class/ Sub/Dup	Matrix/ Sub	Ref Seq	Spk Seq	Dilution	Weight	Volume	Conv. Factor	Flag	Ver
5	108-01B-SD	ICP_S	K M D	S	3	4	1.0	1.04	1.0	1		BW

Analytes	Result	Unspiked Result	Detection Limit	Spike Value	Rec-overy	Specs Low	Specs High	RPD Specs Low	RPD Specs High	Reference Recovery	Reference RPD	V
Aluminum	7126	1890	10	4808	109	75	125		20	105	3.74	Y
Antimony	142	ND	10	192	74.0 *	75	125		20	71.6 *	3.30	Y
Arsenic	187	10	10	192	92.2	75	125		20	89.7	2.75	Y
Barium	206.26	20.14	0.38	192.31	96.8	75	125		20	94.8	2.09	Y
Beryllium	175.28	ND	0.19	192.31	91.1	75	125		20	91.2	0.110	Y
Boron	179.5	ND	4.8	192.3	93.3	75	125		20	92.1	1.29	Y
Cadmium	170.96	ND	0.48	192.31	88.9	75	125		20	88.2	0.791	Y
Calcium	18352	14896	19	4808	71.9 *	75	125		20	65.5 *	9.32	Y
Chromium	183.4	4.4	1.0	192.3	93.1	75	125		20	91.3	1.95	Y
Cobalt	178.9	3.2	1.0	192.3	91.4	75	125		20	91.1	0.329	Y
Copper	189.0	10.6	1.9	192.3	92.8	75	125		20	91.5	1.41	Y
Iron	16044	11798	10	3846	110	75	125		20	88.2	22.0 *	Y
Lead	188.3	11.9	4.8	192.3	91.7	75	125		20	91.2	0.547	Y
Lithium	192.6	3.7	1.9	192.3	98.2	75	125		20	97.0	1.23	Y
Magnesium	9605	5501	10	3846	107	75	125		20	99.3	7.46	Y
Manganese	513.10	330.13	0.48	192.31	95.1	75	125		20	83.7	12.8	Y
Molybdenum	179.5	1.0	1.0	192.3	92.8	75	125		20	91.6	1.30	Y
Nickel	183.8	9.5	1.9	192.3	90.6	75	125		20	88.9	1.89	Y
Potassium	3928	284	19	3846	94.7	75	125		20	94.2	0.529	Y
Selenium	179	ND	10	192	93.2	75	125		20	94.8	1.70	Y
Silicon	438	261	48	192	92.2	75	125		20	74.2 *	21.6 *	Y
Strontium	193.9	18.4	1.0	192.3	91.3	75	125		20	90.6	0.770	Y
Silver	182.3	ND	1.0	192.3	94.8	75	125		20	93.5	1.38	Y
Sodium	4660	37	19	4808	96.2	75	125		20	95.3	0.940	Y
Thallium	187	ND	19	192	97.4	75	125		20	93.3	4.30	Y
Tin	169	ND	10	192	88.0	75	125		20	86.6	1.60	Y
Vanadium	185.2	4.5	1.0	192.3	94.0	75	125		20	93.2	0.855	Y
Zinc	220.4	43.9	1.9	192.3	91.8	75	125		20	89.1	2.99	Y
Titanium	232.8	49.0	4.8	192.3	95.6	75	125		20	94.5	1.16	Y
Zirconium	182.2	5.4	1.9	192.3	91.9	75	125		20	93.8	2.05	Y

ICP METALS POST SPIKE/POST SPIKE DUPLICATE PAIRS

Work Order: 9711108 Client: ENTACT

POST SPIKE

Seq.	Sample ID	Test Code	Class/ Sub/Dup	Matrix/ Sub	Ref Seq	Spk Seq	Dilution	Weight	Volume	Conv. Factor	Flag	Ver
6	108-01B-A	ICP_S	K P	S	3		1.0	1.04	1.0	1		BW

Analytes	Result	Unspiked Result	Detection Limit	Spike Value	Rec-overy	Specs Low	Specs High					V
Aluminum	6735	1890	10	4808	101							Y
Antimony	194	ND	10	192	101							Y
Arsenic	194	10	10	192	95.8							Y
Barium	210.50	20.14	0.38	192.31	99.0							Y
Beryllium	182.19	ND	0.19	192.31	94.7							Y
Boron	186.4	ND	4.8	192.3	96.9							Y
Cadmium	178.57	ND	0.48	192.31	92.9							Y
Calcium	19112	14896	19	4808	87.7							Y
Chromium	189.9	4.4	1.0	192.3	96.5							Y
Cobalt	186.5	3.2	1.0	192.3	95.3							Y
Copper	198.1	10.6	1.9	192.3	97.5							Y
Iron	15067	11798	10	3846	85.0							Y
Lead	197.1	11.9	4.8	192.3	96.3							Y
Lithium	200.8	3.7	1.9	192.3	102							Y
Magnesium	9228	5501	10	3846	96.9							Y
Manganese	500.07	330.13	0.48	192.31	88.4							Y
Molybdenum	189.9	1.0	1.0	192.3	98.2							Y
Nickel	187.5	9.5	1.9	192.3	92.6							Y
Potassium	4114	284	19	3846	99.6							Y
Selenium	194	ND	10	192	101							Y
Silicon	432	261	48	192	89.1							Y
Strontium	207.0	18.4	1.0	192.3	98.1							Y
Silver	188.8	ND	1.0	192.3	98.2							Y
Sodium	4844	37	19	4808	100							Y
Thallium	193	ND	19	192	101							Y
Tin	179	ND	10	192	93.2							Y
Vanadium	192.5	4.5	1.0	192.3	97.8							Y
Zinc	225.5	43.9	1.9	192.3	94.4							Y
Titanium	238.5	49.0	4.8	192.3	98.5							Y
Zirconium	197.9	5.4	1.9	192.3	100							Y

POST SPIKE DUPLICATE

Seq.	Sample ID	Test Code	Class/ Sub/Dup	Matrix/ Sub	Ref Seq	Spk Seq	Dilution	Weight	Volume	Conv. Factor	Flag	Ver
7	108-01B-AD	ICP_S	K P D	S	3	6	1.0	1.04	1.0	1		BW

Analytes	Result	Unspiked Result	Detection Limit	Spike Value	Rec-overy	Specs Low	Specs High	RPD Specs Low	RPD Specs High	Reference Recovery	RPD	V
Aluminum	6718	1890	10	4808	100					101	0.995	Y
Antimony	194	ND	10	192	101					101	0	Y
Arsenic	194	10	10	192	95.8					95.8	0	Y
Barium	210.07	20.14	0.38	192.31	98.8					99.0	0.202	Y
Beryllium	181.40	ND	0.19	192.31	94.3					94.7	0.423	Y
Boron	185.9	ND	4.8	192.3	96.7					96.9	0.207	Y
Cadmium	177.97	ND	0.48	192.31	92.5					92.9	0.431	Y
Calcium	18960	14896	19	4808	84.5					87.7	3.72	Y
Chromium	189.0	4.4	1.0	192.3	96.0					96.5	0.519	Y
Cobalt	188.7	3.2	1.0	192.3	96.5					95.3	1.25	Y
Copper	198.0	10.6	1.9	192.3	97.5					97.5	0	Y
Iron	14968	11798	10	3846	82.4					85.0	3.11	Y
Lead	198.8	11.9	4.8	192.3	97.2					96.3	0.930	Y
Lithium	200.3	3.7	1.9	192.3	102					102	0	Y
Magnesium	9191	5501	10	3846	95.9					96.9	1.04	Y
Manganese	497.48	330.13	0.48	192.31	87.0					88.4	1.60	Y
Molybdenum	189.4	1.0	1.0	192.3	98.0					98.2	0.204	Y
Nickel	186.8	9.5	1.9	192.3	92.2					92.6	0.433	Y
Potassium	4108	284	19	3846	99.4					99.6	0.201	Y
Selenium	190	ND	10	192	99.0					101	2.00	Y
Silicon	436	261	48	192	91.1					89.1	2.22	Y
Strontium	206.4	18.4	1.0	192.3	97.8					98.1	0.306	Y
Silver	189.6	ND	1.0	192.3	98.6					98.2	0.407	Y
Sodium	4807	37	19	4808	99.2					100	0.803	Y
Thallium	188	ND	19	192	97.9					101	3.12	Y
Tin	178	ND	10	192	92.7					93.2	0.538	Y
Vanadium	191.7	4.5	1.0	192.3	97.3					97.8	0.513	Y
Zinc	225.8	43.9	1.9	192.3	94.6					94.4	0.212	Y
Titanium	238.9	49.0	4.8	192.3	98.8					98.5	0.304	Y
Zirconium	199.2	5.4	1.9	192.3	101					100	0.995	Y

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ORGANIC BLANKS
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METHOD BLANK SUMMARY

Client Sample ID.....: **PEST 3780**
Data Type.....: BLANK

Lab Sample ID.....: PEST 3780
Lab File Name.....: 1971119a08.d
Concentration Level...: LOW
Method.....: L8080.m
Compound Sub-List.....: 8081

Date Extracted.....: 11/18/97
Date Analyzed.....: 11/19/97
Time Injected.....: 14:24
Dilution Factor....: 1
Percent Moisture...: 0 % Undecanted

CLIENT SAMPLE ID	RASI SAMPLE ID	DATE & TIME ANALYZED (1)	DATE & TIME ANALYZED (2)
CS 9241	CS 9241	11/19/97 15:10	
SBF003	971110801C	11/19/97 16:56	
SBF004	971110802C	11/19/97 17:41	

ANALYTICAL RESULTS

Client Sample ID.....: **PEST 3780**
Data Type.....: BLANK

Lab Sample ID.....: PEST 3780
Lab File Name.....: 1971119a08.d
Concentration Level...: LOW
Method.....: L8080.m
Compound Sub-List.....: 8081

Date Extracted.....: 11/18/97
Date Analyzed.....: 11/19/97
Time Injected.....: 14:24
Dilution Factor....: 1
Percent Moisture...: 0 % Undecanted

Surrogate Analytes CAS Number	Analyte	% Recovery	Flags	Recovery Limits Lower - Upper	
877-09-8	Tetrachloro-m-xylene	92%		10 - 120	SURROGATE
2051-24-3	Decachlorobiphenyl	100%		10 - 140	SURROGATE

Target Analytes CAS Number	Analyte	Results (ug/Kg)	Flags	EQL
11104-28-2	Aroclor-1221	< EQL		67.0
319-84-6	alpha-BHC	< EQL		1.70
11141-16-5	Aroclor-1232	< EQL		33.0
12674-11-2	Aroclor-1016	< EQL		33.0
58-89-9	gamma-BHC (Lindane)	< EQL		1.70
319-85-7	beta-BHC	< EQL		1.70
76-44-8	Heptachlor	< EQL		1.70
53469-21-9	Aroclor-1242	< EQL		33.0
319-86-8	delta-BHC	< EQL		1.70
309-00-2	Aldrin	< EQL		1.70
12672-29-6	Aroclor-1248	< EQL		33.0
1024-57-3	Heptachlor epoxide	< EQL		1.70
5103-74-2	gamma-Chlordane	< EQL		1.70
5103-71-9	alpha-Chlordane	< EQL		1.70
959-98-8	Endosulfan I	< EQL		1.70
72-55-9	4,4'-DDE	< EQL		3.30
60-57-1	Dieldrin	< EQL		3.30
11097-69-1	Aroclor-1254	< EQL		33.0
72-20-8	Endrin	< EQL		3.30
72-54-8	4,4'-DDD	< EQL		3.30
33213-65-9	Endosulfan II	< EQL		3.30
50-29-3	4,4'-DDT	< EQL		3.30
8001-35-2	Toxaphene	< EQL		67.0
7421-93-4	Endrin aldehyde	< EQL		3.30
1031-07-8	Endosulfan sulfate	< EQL		3.30
11096-82-5	Aroclor-1260	< EQL		33.0
72-43-5	Methoxychlor	< EQL		17.0
53494-70-5	Endrin ketone	< EQL		3.30

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ORGANIC LABORATORY CONTROL SAMPLES
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ANALYTICAL RESULTS

Client Sample ID.....: CS 9241
Data Type.....: METHSPIKE

Lab Sample ID.....: CS 9241
Lab File Name.....: 1971119a09.d
Concentration Level...: LOW
Method.....: L8080.m
Compound Sub-List.....: 8081

Date Extracted.....: 11/18/97
Date Analyzed.....: 11/19/97
Time Injected.....: 15:10
Dilution Factor....: 1
Percent Moisture...: 0 % Undecanted

Surrogate Analytes CAS Number	Analyte	% Recovery	Flags	Recovery Limits Lower - Upper	
877-09-8	Tetrachloro-m-xylene	100%		10 - 120	SURROGATE
2051-24-3	Decachlorobiphenyl	115%		10 - 140	SURROGATE

Spike Analytes CAS Number	Analyte	% Recovery	Flags	Recovery Limits Lower - Upper	
58-89-9	gamma-BHC (Lindane)	94%		46 - 127	SPIKE
76-44-8	Heptachlor	106%		35 - 130	SPIKE
309-00-2	Aldrin	94%		34 - 132	SPIKE
60-57-1	Dieldrin	103%		31 - 134	SPIKE
72-20-8	Endrin	109%		42 - 139	SPIKE
50-29-3	4,4'-DDT	100%		23 - 134	SPIKE

Target Analytes CAS Number	Analyte	Results (ug/Kg)	Flags	EQL	
11104-28-2	Aroclor-1221	< EQL		67.0	
319-84-6	alpha-BHC	< EQL		1.70	
11141-16-5	Aroclor-1232	< EQL		33.0	
12674-11-2	Aroclor-1016	< EQL		33.0	
58-89-9	gamma-BHC (Lindane)	**16.0**		1.70	SPIKE
319-85-7	beta-BHC	< EQL		1.70	
76-44-8	Heptachlor	**18.0**		1.70	SPIKE
53469-21-9	Aroclor-1242	< EQL		33.0	
319-86-8	delta-BHC	< EQL		1.70	
309-00-2	Aldrin	**16.0**		1.70	SPIKE
12672-29-6	Aroclor-1248	< EQL		33.0	
1024-57-3	Heptachlor epoxide	< EQL		1.70	
5103-74-2	gamma-Chlordane	< EQL		1.70	
5103-71-9	alpha-Chlordane	< EQL		1.70	
959-98-8	Endosulfan I	< EQL		1.70	
72-55-9	4,4'-DDE	**0.650**	J	3.30	
60-57-1	Dieldrin	**34.0**		3.30	SPIKE
11097-69-1	Aroclor-1254	< EQL		33.0	
72-20-8	Endrin	**36.0**		3.30	SPIKE
72-54-8	4,4'-DDD	< EQL		3.30	

ANALYTICAL RESULTS

Client Sample ID.....: **CS 9241**
Data Type.....: METHSPIKE

Lab Sample ID.....: CS 9241
Lab File Name.....: 1971119a09.d
Concentration Level...: LOW
Method.....: L8080.m
Compound Sub-List.....: 8081

Date Extracted.....: 11/18/97
Date Analyzed.....: 11/19/97
Time Injected.....: 15:10
Dilution Factor....: 1
Percent Moisture...: 0 % Undecanted

Target Analytes CAS Number	Analyte	Results (ug/Kg)	Flags	EQL	
33213-65-9	Endosulfan II	< EQL		3.30	
50-29-3	4,4'-DDT	**33.0**		3.30	SPIKE
8001-35-2	Toxaphene	< EQL		67.0	
7421-93-4	Endrin aldehyde	**0.870**	J	3.30	
1031-07-8	Endosulfan sulfate	< EQL		3.30	
11096-82-5	Aroclor-1260	< EQL		33.0	
72-43-5	Methoxychlor	< EQL		17.0	
53494-70-5	Endrin ketone	**0.560**	J	3.30	

CHAIN OF CUSTODY

11-17-108 C

ENTACT

1360 N. Wood Dale Rd. Suite A
Wood Dale, Illinois 60191
Ph. 630/616-2100 Fax 630/616-9203

Sampler: Banks Job #: C476

ENTACT Contact: Shane Banks Date: 11/19/97

Turnaround Time Requested

RUSH 24 Hour [X] 48 Hour [ ] 3 Day [ ] Normal [ ] Other [ ] _____

Sample No.	Matrix	Composite or Grab	Description/Remarks	Preservative	Analysis
[illegible]	sand	grab	4 - 4oz glass jars	ice (4°C)	A B C D

Samples Relinquished By: Tracy Lein 11-17-97 Date

Samples Received By: [illegible] 11/17/97 Date

Samples Relinquished By: _____ Date

Samples Received By: _____ 11/18/97 Date

Samples Relinquished By: _____ Date

ANALYSIS

A= Total RCRA metals F= _____

B= Total Petroleum Hydrocarbons G= _____

C= Pesticides H= _____

D= soil pH I= _____

E= _____ J= _____

Condition of Sample Upon Receipt:

Bottles Intact? Yes / No | Volatiles Free of Headspace? Yes / No | COC Seals Present and Intact? Yes / No

Distribution:

Original - To Customer w/ Final Report
2nd Copy - To Job File
3rd Copy - To Lab

00002

CHAIN OF CUSTODY

97-11-108

ENTACT

1360 N. Wood Dale Rd. Suite A
Wood Dale, Illinois 60191
Ph. 630/616-2100 Fax 630/616-9203

Sampler: Banks Job #: C176

ENTACT Contact: S. Banks Date: 11/14/97

RUSH
Turnaround Time Requested
24 Hour [X] 48 Hour [ ] 3 Day [ ] Normal [ ] Other [ ]

Sample No.	Matrix	Composite or Grab	Description/Remarks	Preservative	Analysis
BF 004	soil	grab	4 - 4oz glass jars	ice (4°C)	ABCD

Samples Relinquished By: Tracy Lain 11-17-97 Date

Samples Received By: [signature] 11/17/97 Date

Samples Relinquished By: [signature] Date

Samples Received By: [signature] 11/17/97 Date

Samples Relinquished By: Date

ANALYSIS

A= Total RCRA metals
B= total Petroleum Hydrocarbons
C= Pesticides
D= soil pH
E=
F=
G=
H=
I=
J=

Distribution:
Original - To Customer w/ Final Report
2nd Copy - To Job File

Condition of Sample Upon Receipt:

Bottles Intact? (Yes) / No | Volatiles Free of Headspace? Yes / No | COC Seals Present and Intact? Yes / No

Appendix G

Backfill Laboratory Analytical

ROSS Ross Analytical Services, Inc.
16433 Foltz Industrial Parkway • Strongsville, Ohio 44136
(216) 572-3200 • Fax (216) 572-7620 • 1-800-325-7737

CERTIFICATE OF ANALYSIS

Client:

ENTACT
1630 Wood Dale Road
Wood Dale, IL 60191

Attn: Shane Banks

Work Order #: 97-11-132
Client Code: ENTACT
Report Date: 11/26/97
Work ID: Waste Character, TPH, Pests.
Date Received: 11/19/97

Purchase Order: C176

SAMPLE IDENTIFICATION

Lab Number	Sample Description	Lab Number	Sample Description
01	BF-005	02	BF-006

Enclosed are the analytical results for the samples listed above. Analyses were performed by the methods referenced in the Test Methodologies section, while any special circumstances are described in the Report Comments section. Unless otherwise noted, sample results are not moisture-corrected. Most analytes are reported relative to an Estimated Quantitation Limit (EQL), which is the lowest concentration that can be reliably measured under routine laboratory conditions. Questions or comments concerning the enclosed results should be directed to your Client Services Representative.

Analysis for mercury was done at American Analytical Labs
Their results are included

Certificate approved by
Carol L. Turner

Ross Analytical Services, Inc

DATA QUALIFIER FLAGS FOR ORGANIC ANALYSES

Some or all of the organics results for this Work Order are reported using the U.S. EPA's Contract Laboratory Program (CLP) forms and/or data qualifiers. Analyses may have been performed according to CLP protocol or by SW-846 methodologies. The qualifier flags most commonly used on the report forms are described below.

U - The compound was analyzed for but not detected. The value reported is either the Contract Required Quantitation Limit (CRQL) for analyses by CLP protocol, or the Estimated Quantitation Limit (EQL) for analyses by SW-846 methodologies.

J - The result reported is estimated, most commonly because the compound was detected, but at a concentration below the CRQL or EQL.

P - The percent difference between the results determined from the primary and secondary GC columns was greater than 25%. The value reported is the lower of the two results.

B - The compound was also detected in the blank associated with the sample.

E - The concentration exceeded the upper level of the calibration range of the instrument. A valid result for the compound in question must be obtained from a diluted analysis, if possible.

D - The result was quantified from a dilution of the original sample.

TEST METHODOLOGIES

pH in solids and non-aqueous liquids was determined electrometrically following slurrying with water as in EPA Method 9045C.

Organochlorine pesticides and PCB's were determined using gas chromatography with electron capture detection as in EPA Method 8081.

Metals were determined in solid and non-aqueous liquid samples by digestion with nitric acid, hydrogen peroxide, and hydrochloric acid as in EPA Method 3050A, followed by Inductively Coupled Plasma Emission Spectroscopy as in EPA Method 6010A, unless noted otherwise.

Total petroleum hydrocarbons were determined by infrared spectroscopy following extraction with Freon-113 as in EPA Method 418.1. Solids were Soxhlet extracted as in EPA Method 9071.

Solid and semisolid samples extracted for organochlorine pesticides and PCB's in an ultrasonic extractor using methylene chloride and acetone as in EPA Method 3550A.

Work Order # 97-11-132 Ross Analytical Services, Inc Reported: 12/10/97

Sample Description BF-005 Lab No. 01
Test Description TRPH by EPA 418.1 Test Code HCIR

Date Run 11/21/97 Dilution Factor 1 Units mg/Kg

Compound	Result	EQL
Petroleum hydrocarbons	110	30

Work Order # 97-11-132 Ross Analytical Services, Inc Reported: 12/10/97

Sample Description BF-006 Lab No. 02
Test Description TRPH by EPA 418.1 Test Code HCIR

Date Run 11/21/97 Dilution Factor 1 Units mg/Kg

Compound	Result	EQL
Petroleum hydrocarbons	80	30

Work Order # 97-11-132 Ross Analytical Services, Inc Reported: 11/26/97

Sample Description: BF-005 **Lab No.:** 01

Analyte Description	Result	Units	EQL
pH by EPA 9045C	7.39	Standard units	
Arsenic by ICP	17	mg/Kg	10
Barium by ICP	32.4	mg/Kg	0.38
Cadmium by ICP	1.42	mg/Kg	0.48
Chromium by ICP	10.7	mg/Kg	1.0
Lead by ICP	12.7	mg/Kg	4.8
Selenium by ICP	<EQL	mg/Kg	10
Silver by ICP	<EQL	mg/Kg	1.0

Sample Description: BF-006 **Lab No.:** 02

Analyte Description	Result	Units	EQL
pH by EPA 9045C	7.27	Standard units	
Arsenic by ICP	15	mg/Kg	10
Barium by ICP	55.8	mg/Kg	0.39
Cadmium by ICP	0.74	mg/Kg	0.49
Chromium by ICP	14.0	mg/Kg	1.0
Lead by ICP	22.4	mg/Kg	4.9
Selenium by ICP	<EQL	mg/Kg	10
Silver by ICP	<EQL	mg/Kg	1.0

ANALYTICAL RESULTS

Client Sample ID.....: S BF-005
Data Type.....: SAMPLE

Lab Sample ID.....: 971113201C
Lab File Name.....: l971121a17.d (1), m971121a17.d (2)
Concentration Level...: LOW
Method.....: L8080.m
Compound Sub-List.....: 8081

Date Extracted.....: 11/20/97
Date Analyzed.....: 11/22/97
Time Injected.....: 01:23
Dilution Factor....: 1
Percent Moisture...: 0 % Undecanted

Surrogate Analytes CAS Number	Analyte	% Recovery	Flags	Recovery Limits Lower - Upper	
877-09-8	Tetrachloro-m-xylene	92%		10 - 120	SURROGATE
2051-24-3	Decachlorobiphenyl	115%		10 - 140	SURROGATE

Target Analytes CAS Number	Analyte	Results (ug/Kg)	Flags	EQL
11104-28-2	Aroclor-1221	< EQL		67.0
319-84-6	alpha-BHC	< EQL		1.70
12674-11-2	Aroclor-1016	< EQL		33.0
11141-16-5	Aroclor-1232	< EQL		33.0
58-89-9	gamma-BHC (Lindane)	< EQL		1.70
319-85-7	beta-BHC	**2.60**	P	1.70
76-44-8	Heptachlor	< EQL		1.70
319-86-8	delta-BHC	< EQL		1.70
309-00-2	Aldrin	< EQL		1.70
53469-21-9	Aroclor-1242	< EQL		33.0
1024-57-3	Heptachlor epoxide	< EQL		1.70
12672-29-6	Aroclor-1248	< EQL		33.0
5103-74-2	gamma-Chlordane	< EQL		1.70
5103-71-9	alpha-Chlordane	< EQL		1.70
959-98-8	Endosulfan I	< EQL		1.70
72-55-9	4,4'-DDE	< EQL		3.30
60-57-1	Dieldrin	< EQL		3.30
11097-69-1	Aroclor-1254	< EQL		33.0
72-20-8	Endrin	< EQL		3.30
72-54-8	4,4'-DDD	< EQL		3.30
33213-65-9	Endosulfan II	< EQL		3.30
50-29-3	4,4'-DDT	< EQL		3.30
8001-35-2	Toxaphene	< EQL		67.0
7421-93-4	Endrin aldehyde	< EQL		3.30
1031-07-8	Endosulfan sulfate	< EQL		3.30
11096-82-5	Aroclor-1260	< EQL		33.0
72-43-5	Methoxychlor	< EQL		17.0
53494-70-5	Endrin ketone	< EQL		3.30

ANALYTICAL RESULTS

Client Sample ID.....: S BF-006
Data Type.....: SAMPLE

Lab Sample ID.....: 971113202C
Lab File Name.....: 1971121a20.d (1), m971121a20.d (2)
Concentration Level...: LOW
Method.....: L8080.m
Compound Sub-List.....: 8081

Date Extracted.....: 11/20/97
Date Analyzed.....: 11/22/97
Time Injected.....: 03:39
Dilution Factor....: 1
Percent Moisture...: 0 % Undecanted

Surrogate Analytes CAS Number	Analyte	% Recovery	Flags	Recovery Limits Lower - Upper	
877-09-8	Tetrachloro-m-xylene	92%		10 - 120	SURROGATE
2051-24-3	Decachlorobiphenyl	108%		10 - 140	SURROGATE

Target Analytes CAS Number	Analyte	Results (ug/Kg)	Flags	EQL
11104-28-2	Aroclor-1221	< EQL		66.0
319-84-6	alpha-BHC	< EQL		1.70
12674-11-2	Aroclor-1016	< EQL		33.0
11141-16-5	Aroclor-1232	< EQL		33.0
58-89-9	gamma-BHC (Lindane)	< EQL		1.70
319-85-7	beta-BHC	**1.60**	JP	1.70
76-44-8	Heptachlor	< EQL		1.70
319-86-8	delta-BHC	< EQL		1.70
309-00-2	Aldrin	< EQL		1.70
53469-21-9	Aroclor-1242	< EQL		33.0
1024-57-3	Heptachlor epoxide	< EQL		1.70
12672-29-6	Aroclor-1248	< EQL		33.0
5103-74-2	gamma-Chlordane	< EQL		1.70
5103-71-9	alpha-Chlordane	< EQL		1.70
959-98-8	Endosulfan I	< EQL		1.70
72-55-9	4,4'-DDE	**1.20**	JP	3.30
60-57-1	Dieldrin	< EQL		3.30
11097-69-1	Aroclor-1254	< EQL		33.0
72-20-8	Endrin	< EQL		3.30
72-54-8	4,4'-DDD	< EQL		3.30
33213-65-9	Endosulfan II	< EQL		3.30
50-29-3	4,4'-DDT	< EQL		3.30
8001-35-2	Toxaphene	< EQL		66.0
7421-93-4	Endrin aldehyde	< EQL		3.30
1031-07-8	Endosulfan sulfate	< EQL		3.30
11096-82-5	Aroclor-1260	< EQL		33.0
72-43-5	Methoxychlor	< EQL		17.0
53494-70-5	Endrin ketone	< EQL		3.30

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QUALITY CONTROL
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ICP METALS METHOD BLANKS
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Work Order: 9711132 Client: ENTACT

BLANK

Seq.	Sample ID	Test Code	Class/ Sub.	Dup	Matrix/ Sub	Ref Seq	Spk Seq	Dilution	Weight	Volume	Conv. Factor	Flag	Ver
1	PBS5454	ICP_S	B	P	S			1.0	1.00	1.0	1		CSM

Analytes	Result	Detection Limit	Specs Low	Specs High	V
Aluminum	ND	10			Y
Antimony	ND	10			Y
Arsenic	ND	10			Y
Barium	ND	0.40			Y
Beryllium	ND	0.20			Y
Boron	ND	5.0			Y
Cadmium	ND	0.50			Y
Calcium	ND	20			Y
Chromium	ND	1.0			Y
Cobalt	ND	1.0			Y
Copper	ND	2.0			Y
Iron	ND	10			Y
Lead	ND	5.0			Y
Lithium	ND	2.0			Y
Magnesium	ND	10			Y
Manganese	ND	0.50			Y
Molybdenum	ND	1.0			Y
Nickel	ND	2.0			Y
Potassium	ND	20			Y
Selenium	ND	10			Y
Silicon	ND	50			Y
Strontium	ND	1.0			Y
Silver	ND	1.0			Y
Sodium	ND	20			Y
Thallium	ND	20			Y
Tin	ND	10			Y
Vanadium	ND	1.0			Y
Zinc	ND	2.0			Y
Titanium	ND	5.0			Y
Zirconium	ND	2.0			Y

ICP METALS LABORATORY CONTROL SAMPLES

SPIKE

Seq.	Sample ID	Test Code	Class/ Sub/Dup	Matrix/ Sub	Ref Spk Seq Seq	Dilution	Weight	Volume	Conv. Factor	Flag	Ver
2	LCSS5661	ICP_S	K L	S	1	1.0	1.0	1.0	1		CSM

Analytes	Result	Unspiked Result	Detection Limit	Spike Value	Rec-overy	Specs Low	Specs High					V
Aluminum	4468	ND	10	4280	104	53.04	153.0					Y
Antimony	126	ND	10	116	109	20.00	272.4					Y
Arsenic	99	ND	10	95	104	49.00	153.2					Y
Barium	96.12	ND	0.40	97.70	98.4	70.01	136.1					Y
Beryllium	92.60	ND	0.20	96.50	96.0	64.04	138.9					Y
Boron	91.5	ND	5.0	93.4	98.0	82.01	117.8					Y
Cadmium	103.25	ND	0.50	106.00	97.4	58.96	139.6					Y
Calcium	4403	ND	20	4490	98.1	67.93	136.1					Y
Chromium	81.5	ND	1.0	82.3	99.0	59.05	138.5					Y
Cobalt	92.8	ND	1.0	91.9	101	63.00	139.3					Y
Copper	106.5	ND	2.0	94.9	112	61.01	141.2					Y
Iron	7598	ND	10	6490	117	67.03	134.1					Y
Lead	88.4	ND	5.0	91.7	96.4	53.98	139.6					Y
Lithium	104.6	ND	2.0	97.3	108	85.61	114.1					Y
Magnesium	1818	ND	10	1810	100	62.98	140.9					Y
Manganese	140.09	ND	0.50	138.00	102	68.99	134.8					Y
Molybdenum	101.2	ND	1.0	93.1	109	61.01	140.7					Y
Nickel	101.8	ND	2.0	99.5	102	58.99	142.7					Y
Potassium	1798	ND	20	1680	107	63.10	132.7					Y
Selenium	105	ND	10	99	106	49.04	146.0					Y
Silicon	246	ND	50	143	172 *	89.51	110.5					Y
Strontium	110.1	ND	1.0	112.0	98.3	81.34	118.8					Y
Silver	102.2	ND	1.0	90.6	113	38.96	146.8					Y
Sodium	4484	ND	20	4080	110	51.96	146.2					Y
Thallium	103	ND	20	91	113	49.01	153.4					Y
Tin	97	ND	10	103	94.2	49.03	151.5					Y
Vanadium	89.0	ND	1.0	84.8	105	68.04	135.6					Y
Zinc	92.9	ND	2.0	98.6	94.2	57.00	152.1					Y
Titanium	182.0	ND	5.0	182.0	100	60.44	139.6					Y
Zirconium	100.7	ND	2.0	83.4	121 *	82.97	117.0					Y

ICP METALS MATRIX SPIKE/MATRIX SPIKE DUPLICATE PAIRS

SPIKE

Seq.	Sample ID	Test Code	Class/ Sub/Dup	Matrix/ Sub	Ref Seq	Spk Seq	Dilution	Weight	Volume	Conv. Factor	Flag	Ver
4	132-01B-S	ICP_S	K M	S	3		1.0	1.01	1.0	1		CSM

Analytes	Result	Unspiked Result	Detection Limit	Spike Value	Rec-overy	Specs Low	Specs High					V
Aluminum	12638	8484	10	4950	83.3	75	125					Y
Antimony	91	ND	10	198	46.0 *	75	125					Y
Arsenic	175	17	10	198	79.8	75	125					Y
Barium	213.40	32.38	0.40	198.02	91.4	75	125					Y
Beryllium	161.15	0.44	0.20	198.02	81.2	75	125					Y
Boron	154.7	ND	5.0	198.0	78.1	75	125					Y
Cadmium	151.96	1.42	0.50	198.02	76.0	75	125					Y
Calcium	29145	22386	20	4950	137 *	75	125					Y
Chromium	166.4	10.7	1.0	198.0	78.6	75	125					Y
Cobalt	161.7	8.9	1.0	198.0	77.2	75	125					Y
Copper	191.3	14.0	2.0	198.0	89.5	75	125					Y
Iron	29219	21078	10	3960	206 *	75	125					Y
Lead	167.9	12.7	5.0	198.0	78.4	75	125					Y
Lithium	214.1	23.5	2.0	198.0	96.3	75	125					Y
Magnesium	11786	7480	10	3960	109	75	125					Y
Manganese	484.98	256.42	0.50	198.02	115	75	125					Y
Molybdenum	157.0	1.7	1.0	198.0	78.4	75	125					Y
Nickel	172.9	21.9	2.0	198.0	76.3	75	125					Y
Potassium	4873	1574	20	3960	83.3	75	125					Y
Selenium	164	ND	10	198	82.8	75	125					Y
Silicon	324	225	50	198	50.0 *	75	125					Y
Strontium	209.2	30.3	1.0	198.0	90.4	75	125					Y
Silver	164.5	ND	1.0	198.0	83.1	75	125					Y
Sodium	4745	91	20	4950	94.0	75	125					Y
Thallium	175	ND	20	198	88.4	75	125					Y
Tin	136	ND	10	198	68.7 *	75	125					Y
Vanadium	176.5	12.4	1.0	198.0	82.9	75	125					Y
Zinc	213.2	156.6	2.0	198.0	28.6 *	75	125					Y
Titanium	210.5	70.4	5.0	198.0	70.8 *	75	125					Y
Zirconium	173.4	12.2	2.0	198.0	81.4	75	125					Y

SPIKE DUPLICATE

Seq.	Sample ID	Test Code	Class/ Sub/Dup	Matrix/ Sub	Ref Seq	Spk Seq	Dilution	Weight	Volume	Conv. Factor	Flag	Ver
5	132-01B-SD	ICP_S	K M D	S	3	4	1.0	1.05	1.0	1		CSM

Analytes	Result	Unspiked Result	Detection Limit	Spike Value	Rec-overy	Specs Low	Specs High	RPD Specs Low	RPD Specs High	Reference Recovery	Reference RPD	V
Aluminum	12349	8484	10	4762	81.2	75	125		20	83.9	3.27	Y
Antimony	106	ND	10	190	55.8 *	75	125		20	46.0 *	19.3	Y
Arsenic	174	17	10	190	82.6	75	125		20	79.8	3.45	Y
Barium	211.91	32.38	0.38	190.48	94.3	75	125		20	91.4	3.12	Y
Beryllium	159.87	0.44	0.19	190.48	83.7	75	125		20	81.2	3.03	Y
Boron	154.8	ND	4.8	190.5	81.3	75	125		20	78.1	4.02	Y
Cadmium	153.20	1.42	0.48	190.48	79.7	75	125		20	76.0	4.75	Y
Calcium	31250	22386	19	4762	186 *	75	125		20	137 *	30.3 *	Y
Chromium	166.6	10.7	1.0	190.5	81.8	75	125		20	78.6	3.99	Y
Cobalt	163.8	8.9	1.0	190.5	81.3	75	125		20	77.2	5.17	Y
Copper	185.3	14.0	1.9	190.5	89.9	75	125		20	89.5	0.446	Y
Iron	23446	21078	10	3810	62.2 *	75	125		20	206 *	107 *	Y
Lead	169.3	12.7	4.8	190.5	82.2	75	125		20	78.4	4.73	Y
Lithium	205.3	23.5	1.9	190.5	95.4	75	125		20	96.3	0.939	Y
Magnesium	11891	7480	10	3810	116	75	125		20	109	6.22	Y
Manganese	450.48	256.42	0.48	190.48	102	75	125		20	115	12.0	Y
Molybdenum	158.4	1.7	1.0	190.5	82.3	75	125		20	78.4	4.85	Y
Nickel	173.1	21.9	1.9	190.5	79.4	75	125		20	76.3	3.98	Y
Potassium	4594	1574	19	3810	79.3	75	125		20	83.3	4.92	Y
Selenium	167	ND	10	190	87.9	75	125		20	82.8	5.98	Y
Silicon	364	225	48	190	73.2 *	75	125		20	50.0 *	37.7 *	Y
Strontium	210.1	30.3	1.0	190.5	94.4	75	125		20	90.4	4.33	Y
Silver	163.4	ND	1.0	190.5	85.8	75	125		20	83.1	3.20	Y
Sodium	4562	91	19	4762	93.9	75	125		20	94.0	0.106	Y
Thallium	170	ND	19	190	89.5	75	125		20	88.4	1.24	Y
Tin	143	ND	10	190	75.3	75	125		20	68.7 *	9.17	Y
Vanadium	175.0	12.4	1.0	190.5	85.4	75	125		20	82.9	2.97	Y
Zinc	212.6	156.6	1.9	190.5	29.4 *	75	125		20	28.6 *	2.76	Y
Titanium	214.4	70.4	4.8	190.5	75.6	75	125		20	70.8 *	6.56	Y
Zirconium	167.9	12.2	1.9	190.5	81.7	75	125		20	81.4	0.368	Y

Work Order # 97-11-132 Ross Analytical Services, Inc Reported: 11/26/97

ICP METALS POST SPIKE/POST SPIKE DUPLICATE PAIRS

SPIKE

Seq.	Sample ID	Test Code	Class/ Sub/Dup	Matrix/ Sub	Ref Spk Seq	Spk Seq	Dilution	Weight	Volume	Conv. Factor	Flag	Ver
16	132-01B-A	ICP_S	K P	S	3		1.0	1.05	1.0	1		CSM

Analytes	Result	Unspiked Result	Detection Limit	Spike Value	Rec-overy	Specs Low	Specs High					V
Aluminum	12981	8484	10	4762	94.4							Y
Antimony	181	ND	10	190	95.3							Y
Arsenic	198	17	10	190	95.3							Y
Barium	222.52	32.33	0.38	190.48	99.8							Y
Beryllium	182.63	0.44	0.19	190.48	95.6							Y
Boron	181.6	ND	4.8	190.5	95.3							Y
Cadmium	178.35	1.42	0.48	190.48	92.9							Y
Calcium	28628	22395	19	4762	131							Y
Chromium	191.2	10.7	1.0	190.5	94.8							Y
Cobalt	188.5	8.9	1.0	190.5	94.3							Y
Copper	188.8	14.2	1.9	190.5	91.8							Y
Iron	25556	21078	10	3810	118							Y
Lead	190.6	12.7	4.8	190.5	93.4							Y
Lithium	203.1	23.5	1.9	190.5	94.3							Y
Magnesium	11042	7430	10	3810	93.5							Y
Manganese	446.85	256.42	0.48	190.48	100							Y
Molybdenum	181.2	1.7	1.0	190.5	94.2							Y
Nickel	202.1	21.9	1.9	190.5	94.6							Y
Potassium	5130	1574	19	3810	93.3							Y
Selenium	186	ND	10	190	97.9							Y
Silicon	373	225	48	190	77.9							Y
Strontium	213.7	30.3	1.0	190.5	96.3							Y
Silver	175.5	ND	1.0	190.5	92.1							Y
Sodium	4589	31	19	4762	94.5							Y
Thallium	181	ND	19	190	95.3							Y
Tin	160	ND	10	190	84.2							Y
Vanadium	194.6	12.4	1.0	190.5	95.6							Y
Zinc	340.1	156.6	1.9	190.5	96.3							Y
Titanium	260.2	70.4	4.8	190.5	99.6							Y
Zirconium	193.1	12.2	1.9	190.5	95.0							Y

SPIKE DUPLICATE

Seq.	Sample ID	Test Code	Class/ Sub/Dup	Matrix/ Sub	Ref Spk Seq Seq	Dilution	Weight	Volume	Conv. Factor	Flag	Ver
17	132-01B-AD	ICP_S	K P D	S	3	1.0	1.05	1.0	1		CSM

Analytes	Result	Unspiked Result	Detection Limit	Spike Value	Rec-overy	Specs Low	Specs High	RPD Specs Low	RPD Specs High	Reference Recovery	RPD	V
Aluminum	13099	8484	10	4762	96.9					94.4	2.61	Y
Antimony	179	ND	10	190	94.2					95.3	1.16	Y
Arsenic	198	17	10	190	95.3					95.3	0	Y
Barium	222.15	32.33	0.38	190.48	99.6					99.8	0.201	Y
Beryllium	180.42	0.44	0.19	190.48	94.5					95.6	1.16	Y
Boron	181.2	ND	4.8	190.5	95.1					95.3	0.210	Y
Cadmium	176.60	1.42	0.48	190.48	92.0					92.9	0.974	Y
Calcium	28529	22385	19	4762	129					131	1.54	Y
Chromium	190.7	10.7	1.0	190.5	94.5					94.8	0.317	Y
Cobalt	186.9	8.9	1.0	190.5	93.4					94.3	0.959	Y
Copper	189.5	14.0	1.9	190.5	92.1					91.8	0.326	Y
Iron	25509	21073	10	3810	116					118	1.71	Y
Lead	190.0	12.7	4.8	190.5	93.1					93.4	0.322	Y
Lithium	205.2	23.5	1.9	190.5	95.4					94.3	1.16	Y
Magnesium	11141	7431	10	3810	96.1					93.5	2.74	Y
Manganese	445.50	256.42	0.48	190.48	99.3					100	0.702	Y
Molybdenum	180.1	1.7	1.0	190.5	93.6					94.2	0.639	Y
Nickel	199.9	21.3	1.9	190.5	93.4					94.6	1.28	Y
Potassium	5166	1574	19	3810	94.3					93.3	1.07	Y
Selenium	183	ND	10	190	96.3					97.9	1.65	Y
Silicon	382	225	48	190	82.6					77.9	5.86	Y
Strontium	213.6	30.3	1.0	190.5	96.2					96.3	0.104	Y
Silver	175.2	ND	1.0	190.5	92.0					92.1	0.109	Y
Sodium	4585	31	19	4762	94.4					94.5	0.106	Y
Thallium	181	ND	19	190	95.3					95.3	0	Y
Tin	159	ND	10	190	83.7					84.2	0.596	Y
Vanadium	193.5	12.4	1.0	190.5	95.1					95.6	0.524	Y
Zinc	339.6	156.6	1.9	190.5	96.1					96.3	0.208	Y
Titanium	257.7	70.4	4.8	190.5	98.3					99.6	1.31	Y
Zirconium	190.1	12.2	1.9	190.5	93.4					95.0	1.70	Y

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ORGANIC BLANKS
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Work Order # 97-11-132 **Ross Analytical Services, Inc** **Reported: 11/26/97**

Sample Description HCIR blank, TRPH-3791
Test Description TRPH by EPA 418.1 Test Code HCIR

Date Run 11/21/97 Dilution Factor 1 Units mg/Kg

Compound	Result	EQL
Petroleum hydrocarbons	<EQL	30

METHOD BLANK SUMMARY

Client Sample ID.....: PEST 3792
Data Type.....: BLANK

Lab Sample ID.....: PEST 3792
Lab File Name.....: 1971121a10.d (1), m971121a10.d (2)
Concentration Level...: LOW
Method.....: L8080.m
Compound Sub-List.....: 8081

Date Extracted.....: 11/20/97
Date Analyzed.....: 11/21/97
Time Injected.....: 20:06
Dilution Factor....: 1
Percent Moisture...: 0 % Undecanted

CLIENT SAMPLE ID	RAS SAMPLE ID	DATE & TIME ANALYZED (1)	DATE & TIME ANALYZED (2)
CS 9253	CS 9253	11/21/97 21:36	11/21/97 21:36
S BF-005	971113201C	11/22/97 01:23	11/22/97 01:23
S BF-005MS	971113201CMS	11/22/97 02:08	11/22/97 02:08
S BF-005MSD	971113201CMSD	11/22/97 02:53	11/22/97 02:53
S BF-006	971113202C	11/22/97 03:39	11/22/97 03:39

ANALYTICAL RESULTS

Client Sample ID.....: PEST 3792
Data Type.....: BLANK

Lab Sample ID.....: PEST 3792
Lab File Name.....: 1971121a10.d (1), m971121a10.d (2)
Concentration Level...: LOW
Method.....: L8080.m
Compound Sub-List.....: 8081

Date Extracted.....: 11/20/97
Date Analyzed.....: 11/21/97
Time Injected.....: 20:06
Dilution Factor....: 1
Percent Moisture...: 0 % Undecanted

Surrogate Analytes CAS Number	Analyte	% Recovery	Flags	Recovery Limits Lower - Upper	
877-09-8	Tetrachloro-m-xylene	108%		10 - 120	SURROGATE
2051-24-3	Decachlorobiphenyl	100%		10 - 140	SURROGATE

Target Analytes CAS Number	Analyte	Results (ug/Kg)	Flags	EQL
11104-28-2	Aroclor-1221	< EQL		67.0
319-84-6	alpha-BHC	< EQL		1.70
12674-11-2	Aroclor-1016	< EQL		33.0
11141-16-5	Aroclor-1232	< EQL		33.0
58-89-9	gamma-BHC (Lindane)	**0.840**	JP	1.70
319-85-7	beta-BHC	**1.80**	P	1.70
76-44-8	Heptachlor	< EQL		1.70
319-86-8	delta-BHC	< EQL		1.70
309-00-2	Aldrin	< EQL		1.70
53469-21-9	Aroclor-1242	< EQL		33.0
1024-57-3	Heptachlor epoxide	< EQL		1.70
12672-29-6	Aroclor-1248	< EQL		33.0
5103-74-2	gamma-Chlordane	< EQL		1.70
5103-71-9	alpha-Chlordane	< EQL		1.70
959-98-8	Endosulfan I	< EQL		1.70
72-55-9	4,4'-DDE	< EQL		3.30
60-57-1	Dieldrin	< EQL		3.30
11097-69-1	Aroclor-1254	< EQL		33.0
72-20-8	Endrin	< EQL		3.30
72-54-8	4,4'-DDD	< EQL		3.30
33213-65-9	Endosulfan II	< EQL		3.30
50-29-3	4,4'-DDT	< EQL		3.30
8001-35-2	Toxaphene	< EQL		67.0
7421-93-4	Endrin aldehyde	< EQL		3.30
1031-07-8	Endosulfan sulfate	< EQL		3.30
11096-82-5	Aroclor-1260	< EQL		33.0
72-43-5	Methoxychlor	< EQL		17.0
53494-70-5	Endrin ketone	< EQL		3.30

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ORGANIC LABORATORY CONTROL SAMPLES
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Work Order # 97-11-132 **Ross Analytical Services, Inc** **Reported: 11/24/97**

Total Petroleum Hydrocarbons

Laboratory Control Sample, CS-9252

% Recovery = 111

ANALYTICAL RESULTS

Client Sample ID.....: CS 9253
Data Type.....: METHSPIKE

Lab Sample ID.....: CS 9253
Lab File Name.....: 1971121a12.d (1), m971121a12.c (2)
Concentration Level...: LOW
Method.....: L8080.m
Compound Sub-List.....: 8081

Date Extracted.....: 11/20/97
Date Analyzed.....: 11/21/97
Time Injected.....: 21:36
Dilution Factor....: 1
Percent Moisture...: 0 % Undecanted

Surrogate Analytes CAS Number	Analyte	% Recovery	Flags	Recovery Limits Lower - Upper	
877-09-8	Tetrachloro-m-xylene	115%		10 - 120	SURROGATE
2051-24-3	Decachlorobiphenyl	123%		10 - 140	SURROGATE

Spike Analytes CAS Number	Analyte	% Recovery	Flags	Recovery Limits Lower - Upper	
58-89-9	gamma-BHC (Lindane)	82%		46 - 127	SPIKE
76-44-8	Heptachlor	94%		35 - 130	SPIKE
309-00-2	Aldrin	94%		34 - 132	SPIKE
60-57-1	Dieldrin	94%		31 - 134	SPIKE
72-20-8	Endrin	106%		42 - 139	SPIKE
50-29-3	4,4'-DDT	94%		23 - 134	SPIKE

Target Analytes CAS Number	Analyte	Results (ug/Kg)	Flags	EQL	
11104-28-2	Aroclor-1221	< EQL		67.0	
319-84-6	alpha-BHC	< EQL		1.70	
12674-11-2	Aroclor-1016	< EQL		33.0	
11141-16-5	Aroclor-1232	< EQL		33.0	
58-89-9	gamma-BHC (Lindane)	**14.0**	P	1.70	SPIKE
319-85-7	beta-BHC	**2.20**	P	1.70	
76-44-8	Heptachlor	**16.0**		1.70	SPIKE
319-86-8	delta-BHC	< EQL		1.70	
309-00-2	Aldrin	**16.0**		1.70	SPIKE
53469-21-9	Aroclor-1242	< EQL		33.0	
1024-57-3	Heptachlor epoxide	< EQL		1.70	
12672-29-6	Aroclor-1248	< EQL		33.0	
5103-74-2	gamma-Chlordane	< EQL		1.70	
5103-71-9	alpha-Chlordane	< EQL		1.70	
959-98-8	Endosulfan I	< EQL		1.70	
72-55-9	4,4'-DDE	**1.60**	JP	3.30	
60-57-1	Dieldrin	**31.0**		3.30	SPIKE
11097-69-1	Aroclor-1254	< EQL		33.0	
72-20-8	Endrin	**35.0**		3.30	SPIKE
72-54-8	4,4'-DDD	< EQL		3.30	

ANALYTICAL RESULTS

Client Sample ID.....: CS 9253
Data Type.....: METHSPIKE

Lab Sample ID.....: CS 9253
Lab File Name.....: 1971121a12.d (1), m971121a12.c (2)
Concentration Level...: LOW
Method.....: L8080.m
Compound Sub-List.....: 8081

Date Extracted.....: 11/20/97
Date Analyzed.....: 11/21/97
Time Injected.....: 21:36
Dilution Factor....: 1
Percent Moisture...: 0 % Undecanted

Target Analytes CAS Number	Analyte	Results (ug/Kg)	Flags	EQL	
33213-65-9	Endosulfan II	< EQL		3.30	
50-29-3	4,4'-DDT	**31.0**		3.30	SPIKE
8001-35-2	Toxaphene	< EQL		67.0	
7421-93-4	Endrin aldehyde	< EQL		3.30	
1031-07-8	Endosulfan sulfate	< EQL		3.30	
11096-82-5	Aroclor-1260	< EQL		33.0	
72-43-5	Methoxychlor	< EQL		17.0	
53494-70-5	Endrin ketone	**1.70**	P	3.30	

==========
ORGANIC MATRIX SPIKE/MATRIX SPIKE DUPLICATE PAIRS
==========

ANALYTICAL RESULTS

Client Sample ID.....: S BF-005MS
Data Type.....: MS

Lab Sample ID.....: 971113201CMS
Lab File Name.....: 1971121a18.d (1), m97112la18.d (2)
Concentration Level...: LOW
Method.....: L8080.m
Compound Sub-List.....: 8081

Date Extracted.....: 11/20/97
Date Analyzed.....: 11/22/97
Time Injected.....: 02:08
Dilution Factor....: 1
Percent Moisture...: 0 % Undecanted

Surrogate Analytes CAS Number	Analyte	% Recovery	Flags	Recovery Limits Lower - Upper	
877-09-8	Tetrachloro-m-xylene	115%		10 - 120	SURROGATE
2051-24-3	Decachlorobiphenyl	138%		10 - 140	SURROGATE

Spike Analytes CAS Number	Analyte	% Recovery	Flags	Recovery Limits Lower - Upper	
58-89-9	gamma-BHC (Lindane)	82%		46 - 127	SPIKE
76-44-8	Heptachlor	82%		35 - 130	SPIKE
309-00-2	Aldrin	76%		34 - 132	SPIKE
60-57-1	Dieldrin	88%		31 - 134	SPIKE
72-20-8	Endrin	97%		42 - 139	SPIKE
50-29-3	4,4'-DDT	88%		23 - 134	SPIKE

Target Analytes CAS Number	Analyte	Results (ug/Kg)	Flags	EQL	
11104-28-2	Aroclor-1221	< EQL		67.0	
319-84-6	alpha-BHC	< EQL		1.70	
12674-11-2	Aroclor-1016	< EQL		33.0	
11141-16-5	Aroclor-1232	< EQL		33.0	
58-89-9	gamma-BHC (Lindane)	**14.0**		1.70	SPIKE
319-85-7	beta-BHC	**3.80**	P	1.70	
76-44-8	Heptachlor	**14.0**	P	1.70	SPIKE
319-86-8	delta-BHC	< EQL		1.70	
309-00-2	Aldrin	**13.0**		1.70	SPIKE
53469-21-9	Aroclor-1242	< EQL		33.0	
1024-57-3	Heptachlor epoxide	< EQL		1.70	
12672-29-6	Aroclor-1248	< EQL		33.0	
5103-74-2	gamma-Chlordane	< EQL		1.70	
5103-71-9	alpha-Chlordane	< EQL		1.70	
959-98-8	Endosulfan I	< EQL		1.70	
72-55-9	4,4'-DDE	< EQL		3.30	
60-57-1	Dieldrin	**29.0**		3.30	SPIKE
11097-69-1	Aroclor-1254	< EQL		33.0	
72-20-8	Endrin	**32.0**		3.30	SPIKE
72-54-8	4,4'-DDD	< EQL		3.30	

ANALYTICAL RESULTS

Client Sample ID.....: S BF-005MS
Data Type.....: MS

Lab Sample ID.....: 971113201CMS
Lab File Name.....: 1971121a18.d (1), m971121a18.d (2)
Concentration Level...: LOW
Method.....: L8080.m
Compound Sub-List.....: 8081

Date Extracted.....: 11/20/97
Date Analyzed.....: 11/22/97
Time Injected.....: 02:08
Dilution Factor....: 1
Percent Moisture...: 0 % Undecanted

Target Analytes CAS Number	Analyte	Results (ug/Kg)	Flags	EQL	
33213-65-9	Endosulfan II	< EQL		3.30	
50-29-3	4,4'-DDT	**29.0**	P	3.30	SPIKE
7421-93-4	Endrin aldehyde	**0.920**		3.30	
8001-35-2	Toxaphene	< EQL		67.0	
1031-07-8	Endosulfan sulfate	< EQL		3.30	
11096-82-5	Aroclor-1260	< EQL		33.0	
72-43-5	Methoxychlor	< EQL		17.0	
53494-70-5	Endrin ketone	< EQL		3.30	

ANALYTICAL RESULTS

Client Sample ID.....: S BF-005MSD
Data Type.....: MSD

Lab Sample ID.....: 971113201CMSD
Lab File Name.....: 1971121a19.d (1), m971121a19.d (2)
Concentration Level...: LOW
Method.....: L8080.m
Compound Sub-List.....: 8081

Date Extracted.....: 11/20/97
Date Analyzed.....: 11/22/97
Time Injected.....: 02:53
Dilution Factor....: 1
Percent Moisture...: 0 % Undecanted

Surrogate Analytes CAS Number	Analyte	% Recovery	Flags	Recovery Limits Lower - Upper	
877-09-8	Tetrachloro-m-xylene	85%		10 - 120	SURROGATE
2051-24-3	Decachlorobiphenyl	100%		10 - 140	SURROGATE

Spike Analytes CAS Number	Analyte	% Recovery	Flags	Recovery Limits Lower - Upper	
58-89-9	gamma-BHC (Lindane)	82%		46 - 127	SPIKE
76-44-8	Heptachlor	76%		35 - 130	SPIKE
309-00-2	Aldrin	88%		34 - 132	SPIKE
60-57-1	Dieldrin	85%		31 - 134	SPIKE
72-20-8	Endrin	94%		42 - 139	SPIKE
50-29-3	4,4'-DDT	88%		23 - 134	SPIKE

Target Analytes CAS Number	Analyte	Results (ug/Kg)	Flags	EQL	
11104-28-2	Aroclor-1221	< EQL		66.0	
319-84-6	alpha-BHC	< EQL		1.70	
12674-11-2	Aroclor-1016	< EQL		33.0	
11141-16-5	Aroclor-1232	< EQL		33.0	
58-89-9	gamma-BHC (Lindane)	**14.0**		1.70	SPIKE
319-85-7	beta-BHC	**4.80**		1.70	
76-44-8	Heptachlor	**13.0**	P	1.70	SPIKE
319-86-8	delta-BHC	< EQL		1.70	
309-00-2	Aldrin	**15.0**	P	1.70	SPIKE
53469-21-9	Aroclor-1242	< EQL		33.0	
1024-57-3	Heptachlor epoxide	< EQL		1.70	
12672-29-6	Aroclor-1248	< EQL		33.0	
5103-74-2	gamma-Chlordane	< EQL		1.70	
5103-71-9	alpha-Chlordane	< EQL		1.70	
959-98-8	Endosulfan I	< EQL		1.70	
72-55-9	4,4'-DDE	< EQL		3.30	
60-57-1	Dieldrin	**28.0**	P	3.30	SPIKE
11097-69-1	Aroclor-1254	< EQL		33.0	
72-20-8	Endrin	**31.0**	P	3.30	SPIKE
72-54-8	4,4'-DDD	< EQL		3.30	

ANALYTICAL RESULTS

Client Sample ID.....: S BF-005MSD
Data Type.....: MSD

Lab Sample ID.....: 971113201CMSD
Lab File Name.....: 1971121a19.d (1), m971121a19.d (2)
Concentration Level...: LOW
Method.....: L8080.m
Compound Sub-List.....: 8081

Date Extracted.....: 11/20/97
Date Analyzed.....: 11/22/97
Time Injected.....: 02:53
Dilution Factor....: 1
Percent Moisture...: 0 % Undecanted

Target Analytes CAS Number	Analyte	Results (ug/Kg)	Flags	EQL	
33213-65-9	Endosulfan II	< EQL		3.30	
50-29-3	4,4'-DDT	**29.0**	P	3.30	SPIKE
7421-93-4	Endrin aldehyde	< EQL		3.30	
8001-35-2	Toxaphene	< EQL		66.0	
1031-07-8	Endosulfan sulfate	< EQL		3.30	
11096-82-5	Aroclor-1260	< EQL		33.0	
72-43-5	Methoxychlor	< EQL		17.0	
53494-70-5	Endrin ketone	< EQL		3.30	

Mercury
Method: SW846 7471

Samp	Sample Description	Result	Units	Detection Limit	Analyzed	By
03A	971113201/CBL2B Bin 1 (BF-005)	< 0.05	mg/Kg	0.05	11/25/97	JSC

Mercury
Method: SW846 7471

Samp	Sample Description	Result	Units	Detection Limit	Analyzed	By
04A	971113202/CBL2B Bin 1 (BF-006)	< 0.05	mg/Kg	0.05	11/25/97	JSC

CHAIN OF CUSTODY 97-11-132

ENTACT

1360 N. Wood Dale Rd. Suite A
Wood Dale, Illinois 60191
Ph. 630/616-2100 Fax 630/616-9203

Sampler: Bankl Job #: C176

ENTACT Contact: S. Bankl Date: 11/17/97

Turnaround Time Requested
Rush
24 Hour [X] 48 Hour [ ] 3 Day [ ] Normal [ ] Other [ ]

Sample No.	Matrix	Composite or Grab	Description/Remarks	Preservative	Analysis
BF-005	soil	grab	4-4oz glass bucket auger sample	4°C	A B C D
BF-006	soil	grab	4-4oz glass	4°C	A B C D
			* please hold samples until BF-007 &		
			BF-004 have been analyzed and		
			it has been determined that they		
			will not fail		
			contact Shane Bankl @ (216) 687-0461		
			Due 11/24/97 pm JS		

Samples Relinquished By: Cheap DC 11/18/97 Date

Samples Received By: [signature] 11/19/97 Date

Samples Relinquished By: [signature] Date

Samples Received By: [signature] 11/19/97 1630 Date

Samples Relinquished By: _____ Date

ANALYSIS

A= total RCRA metals F= _____
B= pesticides G= _____
C= total petroleum hydrocarbons H= _____
D= soil pH I= _____
E= _____ J= _____

Distribution:
Original - To Customer w/ Final Report
2nd Copy - To Job File
3rd Copy - To Lab

Condition of Sample Upon Receipt:

Bottles Intact? Yes / No	Volatiles Free of Headspace? Yes / No	COC Seals Present and Intact? Yes / No

000032

ROSS ANALYTICAL SERVICES, INC.

SAMPLE RECEIPT REPORT

WORKORDER # 97-11-132

RECEIVED BY: [illegible] DATE/TIME: 11/19/97 1630 LOGIN DATE: 11/20/97

SAMPLES ARRIVED BY(Circle One) Fed–Ex UPS (Other(specify) ESK

SHIPPING DOCUMENTATION PRESENT? YES/(NO)
TRACKING NUMBER _____

SHIPPING CONTAINER INTACT? (YES)/NO (If no, explain below)

CUSTODY SEALS PRESENT? (YES)/NO
CUSTODY SEALS INTACT? (YES)/NO
Where? Cooler/(Bottles)
Seal Nos. _____

SAMPLE TEMPERATURE 5°C

AQUEOUS SAMPLES FOR METALS, pH < 2? YES/NO/(NA)

AQUEOUS SAMPLES FOR WET TESTS, pH < 2? YES/NO/(NA)

AQUEOUS SAMPLES FOR CYANIDE, pH > 12? YES/NO/(NA)

AQUEOUS SAMPLES FOR VOA'S PRESERVED WITH HCl? YES/NO/(NA) (From COC, Do not take pH)

OTHER PRESERVATION REQUIREMENTS MET? YES/NO/(NA) SPECIFY:

SAMPLES INTACT? (YES)/NO/NA (If no, explain below)

SHIPPING CONTAINER: (Circle) Ross Client
Date Returned N/A

COMMENTS:

Appendix H

Correspondence

ENTACT

environmental tactics in waste management

October 15, 1997

Mr. Thomas Alcamo
U.S. EPA Region 5
77 W. Jackson Blvd. SR-6J
Chicago, IL 60604-3590

RE: Plan of Remedial Activities for Holmden Avenue Property

Dear Mr. Alcamo:

This document contains plans for the removal activities of contaminated soils for property located on Holmden Avenue in Cleveland, Ohio. This document is written in conjunction with information generated by ENTACT in the *Master Metals - Holmden Avenue Site* packet dated April 10, 1997.

Remediation activities are scheduled to begin approximately October 20th, 1997. ENTACT crew members, upon finishing final activities at the Master Metal site, will be re-deployed to complete the remediation of this property.

The following is a summary of work items that will be initiated to complete the clean-up of this property.

Mobilization/Site Preparation

The project will commence with the deployment of OSHA 40 Hour Hazardous Materials trained technicians. These technicians will be coming directly from the Master Metals Facility. This crew is extremely familiar with the area and with this type of remediation work.

Mobilization to the Holmden Avenue Property site will consist of moving minimal personnel and equipment. Equipment already in place at the Master Metals facility will be utilized as much as possible. The office trailer that was used during emergency removal actions will be continued to be used due to its close proximity and prior hook-up of electricity, phones, and restroom facilities. This will enable a continued strong support base for administrative office tasks.

Site preparation tasks will involve notifying home owners adjacent to the site of upcoming work activities that will be performed. These homeowners will also be told of any potential safety and

health issues regarding the site. Prior to any digging, a utility locator will be notified to check the area for buried hazards. Equipment operators will be informed of any buried hazards as well as reminded of any overhead hazards. Project specific safety measures will be reviewed, instituted, and enforced. A grid layout system will be completed on contaminated areas to determine exact areas of excavation.

Equipment will most likely consist of a long stick excavator, a wheel loader, and engineering controls such a pressure washers for dust suppression. Additional equipment will include an XRF instrument, sampling equipment, and decontamination equipment.

Work zones will be established and enforced near the work area. The safe zone will be designated as the area away from the primary contamination and operations. This will most likely be located at the front of the property nearest Holmden Avenue. An exclusion zone will be established in the area surrounding the actual excavation operations. Decontamination zones will be established to facilitate decontamination of personnel and equipment.

Air Sampling

Air monitoring will be performed on site to ensure that all personnel and surrounding homes are not exposed to airborne contamination through airborne emissions. Air quality samples will be collected with low volume samplers in potential generation areas. Potential generation areas will consist of the excavation area, and any other contaminated material handling area. Low volume air monitors will be positioned upwind, downwind and inside of these areas. If possible and applicable, the weather station used during the Master Metals clean-up may be used if deemed necessary by on-site project management.

Field Activities

Field activities will commence the week of October 20th and will last approximately 2 weeks. Notification of work activities to home owners, grid layout, and site preparation and mobilization will be first. Excavation activities will begin immediately afterward. Areas exhibiting lead concentrations of over 400 ppm will be excavated. Utilizing a long stick excavator, areas that are down slope will be dug from either the top or the bottom of the property slope. A wheel loader or excavator may be used to scrape the top six inches of material from level portions of the site. An XRF device will be utilized to guide excavation activities thus minimizing the amount of soil required to be excavated.

The excavated material will be loaded directly into dump trucks and brought to the Master Metals facility. It will be placed in the on-site storage tank that was constructed during the emergency removal action. Temporary stockpiling of the material in this location will allow for adequate characterization while minimizing human exposure which may occur if the material is stockpiled at Holmden Avenue.

Verification Sampling

Once XRF analyses indicate the removal criteria has been met, verification samples will be collected. Excavation will be verified using confirmation sampling. One laboratory verification grab sample will be collected from each grid. In the case of slopes, the established grid will be extended down the slope and one sample location will be collected at each extended grid slope location. The samples will be collected, handled and analyzed at the laboratory with proper quality assurance/quality control procedures. The confirmation sampling will be utilized to verify clean-up criteria has been met.

Site Restoration

Following confirmation of clean-up levels, excavation area restoration will begin. In order to minimize open excavation areas, ENTACT will begin the restoration process as soon as possible after gaining laboratory verification sample results indicating the cleanup objective of 400 ppm has been obtained.

Backfill material will be obtained from an off-site source. Samples will be obtained from the backfill source to ensure that the material is indeed clean. This material will then be placed in the excavated areas. The areas will be returned to drainage grade and re-seeded.

Demobilization

With the verified completion of all work items, demobilization activities will begin. All equipment and supplies brought to the site will be removed.

As stated earlier, work activities for this scope are scheduled to be completed within a two week time period. This can vary depending on turn around times of laboratory samples and/or inclement weather.

Should you have any questions regarding the above, please contact me at (630) 616-2100.

Respectfully submitted,

Dean Pisani
ENTACT

Michael DeRosa
ENTACT

Robert S. Santoro
ENTACT

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
77 WEST JACKSON BOULEVARD
CHICAGO, IL 60604-3590

REPLY TO THE ATTENTION OF:

October 21, 1997

Mr. Michael DeRosa
ENTACT
1360 N. Wood Dale Road, Suite A
Wood Dale, Illinois 60191

RE: Plan of Remedial Activities for Holmden Avenue Property

Dear Mr. DeRosa:

The following is a list of my comments/concerns for the remedial activities scheduled for the Holmden Avenue Property:

1. Can Entact provide a project schedule that will detail the phases of work to be performed over the two-week period?

2. Can Entact provide a workplan that will include more specific information on the verification sampling such as the type of lab that will be used, type of XRF instrument and sampling equipment. (E.P.A. does not have standard operating procedures for the use of this piece of equipment), and information on the grid system of sampling (cell size, etc.).

3. Please include a Health and Safety Plan and provide a QAPP Amendment with respect to the additional work being done at the Holmden Property.

4. Can Entact provide more information on the air sampling such as locations of air monitors with respect to the site? Please represent them on a map.

If you have any questions general or specific, please fell free to contact me at (312) 353-9228.

Sincerely,

Ababi Harris
U.S.E.P.A.

ENTACT
environmental tactics in waste management

October 27, 1997

Ababi Harris
U.S. EPA Region 5
77 W. Jackson Blvd, SR-6J
Chicago, Illinois 60604

RE: Plan of Remedial Activities for Holmden Avenue Property

Dear Mr. Harris:

This correspondence is in response to your letter dated October 21, 1997 and contains ENTACT's responses to U.S. EPA comments as outlined below:

1. U.S. EPA Comment: Can ENTACT provide a project schedule that will detail the phases of work to be performed over the two-week period?

Response: It is anticipated that site activities will commence the week of October, 27, 1997 and last three weeks. Based on this start date, excavation activities will take approximately one to two weeks. Laboratory verification will be conducted from week one through week two. Restoration activities will begin during weeks two and three.

2. Can ENTACT provide a workplan that will include more specific information on the verification sampling such as the type of lab that will be used, type of XRF instrument and sampling equipment (E.P.A. does not have standard operating procedures for the use of this piece of equipment), and information on the grid system of sampling (cell size, etc.).

Response:

The laboratory to be used for the Holmden property excavation will be NET Laboratories, Bartlett, Illinois. The operation of the XRF will be based on the ENTACT SOP for operation of the Spectrace 9000 XRF which is included in the Engineering Evaluation / Cost Analysis (EE/CA) Support Sampling Plan. It should be noted that the XRF will be used for excavation guidance only. The grid verification samples (one per grid) will be sent to NET Laboratories.

Due to the irregular shape of the Holmden property, exact dimensions of each grid cannot be

specified. However, the attached map shows approximate sizes of each grid. No grid will be larger than 50 feet by 50 feet.

3. Please include a Health and Safety Plan and provide a QAPP amendment with respect to the work being done at the Holmden Property.

Response: The quality assurance/quality control procedures will be conducted in accordance with those procedures specified in the Phase I Time-critical Removal Workplan for the Master Metals Site. In addition, ENTACT will initiate health and safety procedures outlined in the Health and Safety plan for the Phase I Time-critical Removal workplan.

4. Can ENTACT provide more information on the air sampling such as location of air monitors with respect to the site? Please represent them on a map.

Response: The air monitor locations are shown on the attached map. It should be noted that the location of the low volume personal pumps is approximate. However, one pump will be situated downwind, one pump will be located upwind, and a third monitor will be located on excavation personnel.

If you have any questions regarding these responses, please contact me at (630) 616-2100.

Respectfully,

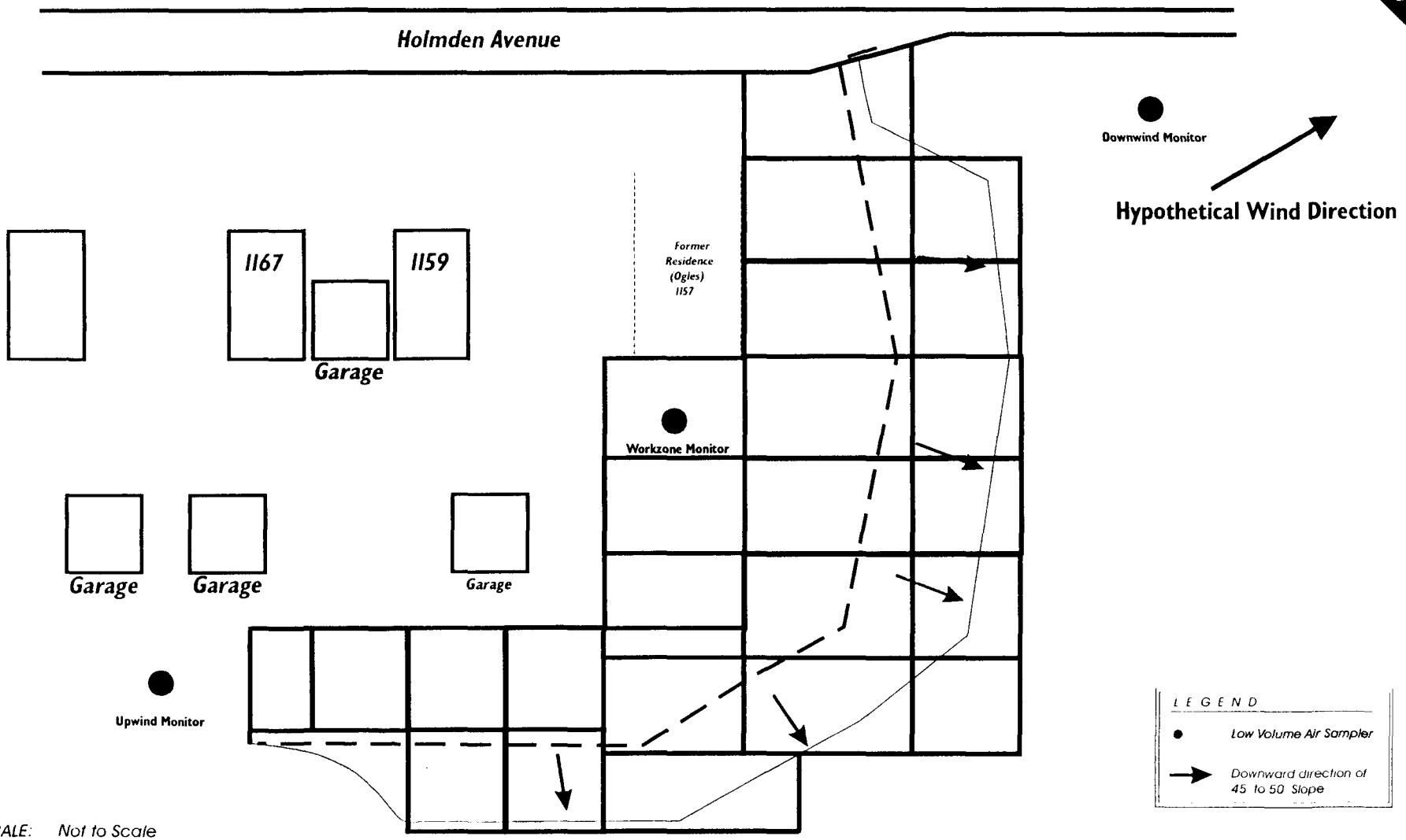
Michael DeRosa

Michael DeRosa
ENTACT, Inc.

Holmden Avenue Site
Cleveland, Ohio

Approximate Grid System

ENTACT
Leading the Nation in Customer Care
October 27, 1997



NOTE: Grid Sizes Approximate at 50' X 50'. True dimensions will be established upon mobilization to site.

ENTACT

November 5, 1997

Mr. Ababi Harris
U. S. EPA Region 5
77 W. Jackson Blvd, SR-6J
Chicago, Illinois 60604

Re: Plan for Remedial Activities at the Holmden Avenue Property
Cleveland, Ohio

Dear Mr. Harris:

It was a pleasure meeting you. As follow-up to our meeting on November 4, 1997, we would like to document the agreement that was reached with yourself and Ohio EPA representatives Bart Ray and Sheila Abraham, as to the remedial activities to be performed at the Holmden Avenue property in Cleveland, Ohio.

It was determined that all material greater then 400 parts per million total lead will be excavated from areas that are safely accessible. This includes areas down the southern slope. Areas that are not accessible to humans or equipment and/or have been covered with cement debris deposited by the City of Cleveland will not be excavated. Samples will be collected from these areas to document lead levels. The property at the immediate bottom of the slope includes a railway and is a heavily industrialized area being utilized as storage space for LTV Steel.

Also, preliminary XRF samples indicated that lead levels greater then 400 ppm does not exist in the areas that are unaccessible.

Please let us know immediately if our understanding of activities to be performed is not in accordance with yours. We can be contacted at (630) 616-2100.

Respectfully submitted,

Dean C. Pisani
ENTACT

Mike DeRosa

cc: Bart Ray, Ohio EPA
Sheila Abraham, Ph.D., Ohio EPA
Tom Alcamo, U. S. EPA
Master Metals Technical Committee

Chicago Office
1360 North Wood Dale Road, Suite A • Wood Dale, IL 60191 • 630.616.2100 • Fax 630.616.9203
Chicago • Dallas • Indianapolis

Appendix I

Site Access Agreement

ACCESS AGREEMENT TO CONDUCT REMOVAL ACTIVITIES

The undersigned is the owner of property located at 115 Holmdale Rd Haverhill, and hereby grants to the Respondents in the United States Environmental Protection Agency ("EPA") Administrative Consent Order for the Master Metals Site ("Order"), their agents and contractors including ENTACT, and authorized governmental representatives access to my property to perform all work required by EPA in the Order. The right of access granted by this Agreement will begin on April 9, 1997, and will last until the EPA notifies Respondents that the activities required by the Order have been properly completed.

By: [signature]
(signature)

[printed name]
(printed name)

Date: 4/9/97

Witness:

[signature]
(signature)

Shane D. Banks
(printed name)

Appendix J

Material Tickets

SALES ORDER

Kurtz Bros., Inc.

Corporate Office, Cleveland
P.O. Box 31179 • Independence, OH 44131
(216) 641-7000 Retail (216) 641-9999 Commercial

Columbus Office
2850 Rohr Rd. • Groveport, OH 43125
(614) 491-0868

DELIVER TO:

BILL TO:

COMPUTER ORDER NO.

PAGE NUMBER

ORDER DATE	CUSTOMER P.O. #	JOB #	PAYMENT TERMS	TAKEN BY

DATE REQ.	DATE DELIVERED	DELIVERED BY	TRUCK #	PHONE: WORK	PHONE: HOME

YDS / LBS / QTY ORDERED	YDS / LBS / QTY DELIVERED	TONS	PRODUCT / DESCRIPTION	UNIT PRICE	TOTAL PRICE

ACCEPTANCE OF DELIVERY AND DAMAGE WAIVER *Please read carefully before signing*

My signature below warrants that I am authorized to accept this delivery and the terms of this waiver, on behalf of the above customer. If delivery is to be made beyond the street curb, Customer agrees to accept full responsibility and assume all risk for any and all damage caused to the driveway, sidewalk, house, garage, buildings, vehicles, lawn, shrubs, utility wires, or any other items or property, real or personal, located at the delivery site. I have verified the amount of material agrees with the quantity ordered and the amount appearing on the shipping document. Customer agrees to indemnify, defend and hold Kurtz harmless from and against any and all damage, loss, cost or expense relating to or arising from all such deliveries. Customer further agrees that Kurtz shall not, under any circumstances, be responsible for any indirect, special or consequential damages and Kurtz's liability if any, shall in no event exceed the total cost of materials delivered.

Supplier _____

Ticket # _____

_____ Signature

_____ Name Printed

_____ Date

13

SILVER OAK LAND DEVELOPMENT, INC.
Location: 26101 Solon Road
Oakwood Village, Ohio
MAILING: 7730 BOND STREET, SOLON, OHIO 44139
Phone: (216) 439-6700

Truck No. _____ Date _____ 19 ___

Sold To: _____

TIME-IN _____ TIME-OUT _____

DESCRIPTION	
PACKER	
OPEN TOP	
S/AXLE TRUCK	
T/AXLE TRUCK	
TRI-AXLE	
TRACTOR-TRAILER	
FILL SAND	

OUT

SIGNED _____

PIT COPY

97702 14

SILVER OAK LAND DEVELOPMENT, INC.
Location: 26101 Solon Road
Oakwood Village, Ohio
MAILING: 7730 BOND STREET, SOLON, OHIO 44139
Phone: (216) 439-6700

Truck No. 33 Date 1-10 19 97

Sold To: [illegible]

TIME-IN [illegible] TIME-OUT

DESCRIPTION	
PACKER	
OPEN TOP	
S/AXLE TRUCK	
T/AXLE TRUCK	
TRI-AXLE	
TRACTOR-TRAILER	1 Load
FILL SAND	dirt

OUT

SIGNED _____

PIT COPY

Under penalty of law, I certify that, to the best of my knowledge, after appropriate inquiries of all relevant persons involved in the preparation of this report, the information submitted is true, accurate, and complete.

Shane D. Banks
Project Engineer, ENTACT Inc.

3/18/98
Date

CONFIDENTIAL INFORMATION OF ENTACT

Entact uses proprietary technology in additive and treatment processing to achieve its fixation and permeability results. Patents are both issued and pending, including U.S. Patent # 5,588,947, # 5,591,116, and # 5,667,696.